

Publication summary	
Title	<u><i>The use of blended diets in children with enteral feeding tubes: a joint position paper of the ESPGHAN committees of allied health professionals and nutrition</i></u>
Authors	Köglmeier J, Assecaira I, Banci E, De Koning B, Haiden N, Indrio F, Kastelijn W, Kennedy D, Luque V, Norsa L, Verduci E, Sugar A
Publication date + magazine	January 2023, JPGN
Type of study	Position paper by ESPGHAN committee (incl. systematic review of current literature)
Objective / hypothesis	<p>Provide comprehensive guide for HCPs to manage blended diet (BD) in children with gastrostomy tubes</p> <p><i>Current issue: while evidence suggest that BD might be beneficial in patients with neurological disorders who have been long-term tube-dependent, a large number of HCPs have been reluctant to advertise its use (concerns considering safety & inferiority to commercial formulas). Despite these doubts, many parents chose to use BD regardless, but without support there's an increased risk of nutritionally inadequate diets.</i></p>
Some definitions	<p>Blended Diet (BD, in this paper BD refers exclusively to tube BD!):</p> <ul style="list-style-type: none"> - "A blended diet (BD) is one that uses real food rather than just formula." - "... a term used to describe the process of giving liquidized or blended food into the enteral feeding device of patients requiring tube feeding and is different from an orally offered pureed diet." - Terms used: blended food, liquidized tube feeds, blenderized food/diet, liquidized diet, homemade blended formula, and pureed table food <p>Standard formula:</p> <ul style="list-style-type: none"> - "Standard complete feeds available for tube feeding are ready to use liquid formulas or powdered preparations, which are made up with water prior to feeding" - "These commercially prepared formulas have been available since the second half of the last century and <u>are considered the gold standard for the use as a sole source of nutrition.</u>"
Results	<p>Benefits:</p> <ul style="list-style-type: none"> - Emotional wellbeing of the child & psychosocial interactions of the whole family > improved quality of life - Beneficial impact of eating habits of the whole family - Less gastrointestinal (GI) symptoms / improvement of troublesome upper GI symptoms, including retching & GERD (BDs have a higher viscosity compared to standard enteral formulas; this could contribute to the reduction in GERD) - Vomiting reduced - Improvement of foregut dysmotility - Some children were able to tolerate larger feed volumes - Increased interest in eating orally - Less hospital admissions - Growing evidence to suggest an association between BD & increased bacterial diversity

Risks:

- Blockage or damage to the feeding tube
- Food hygiene: BD is not sterile and could therefore cause infections or food poisoning
- The volume for BD is often quite large compared to formula feed and may be less tolerated and insufficient to provide adequate nutrients
- Nutritional content of BD varies and the exact amount of calories and micronutrient applied is unknown > preparation & storage impact nutrient content of blends. However, healthy children also have a variation in their nutritional intake; the risk is therefore likely to be small.
 - o "Mixing blended foods with a prescribed formula or a readily available feed or supplement with a stable nutrient content may help overcome this problem"

Medication: the absorption of medication may change during the transition from standard enteral nutrition to BD.

Financials: BD might be more expensive

- Syringes & feeding lines may need to be changed more often
- Increased food bills
- Not everyone is able to purchase an expensive blender

BD is more **labor intensive**.

Additional care is needed to ensure the family has **excellent food hygiene** and storage.

Feeding device: gastrostomy tubes are the preferred route of choice (tube: 14 Fr or wider).

Recommendations (see page 4 for decision tree / flow chart):

- Considering the consistency: make use of the IDDSI > depending on tube size blends ranging between levels 1 and 3 would be recommended (level 4 is only recommended for larger diameters)
 - o IDDSI 0-1: high-gravity bolus feeds
 - o IDDSI 2-3: 60mL syringe with repeated slow pushed in 5 to 20mL > similarly to a child who is chewing and swallowing
 - o Manufacturers of feeding pumps do not advise to deliver BD through the pumps > children requiring continuous feed are no suitable candidates for BD
- Use a blender
- Get support from dietician
 - o At the start: regular reviews to ensure appropriate amount of nutrients
 - o Those established on BD: 6-12 monthly follow-up meeting
 - o Every child should also have a named clinician (pediatrician or GP) responsible for the overall clinical management
- When: as soon as the child is old enough to start solids

	<ul style="list-style-type: none"> - Adhere to principles of food hygiene and preparation - BD should be prepared as close to its use as possible <p>Commercial feeds containing food-derived ingredients may be a suitable alternative to BD. These formulas can make a suitable first choice when children are transitioned from a standard formula to a BD.</p>
Conclusion	<p>Most important conclusion(s):</p> <ul style="list-style-type: none"> - Sterile, nutritionally complete commercially available feeds are still considered the gold standard of feeding patients requiring enteral nutrition - They do recommend that a BD can be used as a safe alternative or adjunct to commercially available ready-to-use formulas - They do consider BDs to be a useful addition to the feeding options in the nutritional management of children
Short description of the methods used (target group, duration intervention etc.)	<p>Systematic literature search (Pubmed, MEDLINE, Cochrane Database of Systemic Reviews from 1992 to 2021). 39 articles were considered relevant and included, also recent guidelines were reviewed.</p>

Decision tree/flow chart: how to commence a child on a blended diet?

