

Infant, Pediatric, and Blended Formulas

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Disclosures

- We have no disclosures or conflicts of interest



Objectives

- Review standard infant and pediatric formulas
- Describe benefits of using blended formulas for enteral feeding
- Compare and contrast commercially prepared food-based blended formulas



Introduction to Infant and Pediatric Formulas

- Cow's Milk-Based
 - Lactose-free and partially hydrolyzed
 - Reflux formulas
- Soy-Based
- Semi-Elemental (Protein Hydrolysate)
- Elemental (Amino Acid-Based)
- Premature/Premature Transitional
- Plant-based
- Food-based
- Altered Fat
- Modulars
- Blended food formulas



<https://diapercalculator.com/formula/>



Cow's Milk Based Infant Formulas

- For healthy or sick infants when human milk (HM) is not available
- 20 kcal/oz



Cow's Milk Based Formulas		
Indications	Formula Names	Helpful product information
Standard infant nutrition	Enfamil Infant Enfamil NeuroPro Infant Enfamil Enspire	Routine formula for full-term infants 60:40 whey-to-casein ratio Contains prebiotics (GOS, PDX) <ul style="list-style-type: none"> • Enfamil NeuroPro contains MFGM (milk fat globule membrane), additional prebiotic (2'FL HMO), and is Non-GMO • Enfamil Enspire contains Lactoferrin (immune supporting protein) and is Non-GMO
	Gerber Good Start Gentle Gerber Good Start GentlePro Gerber Good Start GentlePro2	Routine formula for full-term infants Contains prebiotic galacto-oligosaccharides (GOS) and probiotic <i>B. lactis</i> Contains 2'-FL HMO prebiotic Non-GMO <ul style="list-style-type: none"> • Gerber Gentle is 70:30 whey-to-casein ratio • Gerber GentlePro is 100% partially hydrolyzed whey protein • Gerber GentlePro 2 100% partially hydrolyzed whey protein and is marketed for age 6mo+. Higher in calcium, phos, and Iron. Lower in protein.
	Similac Advance Similac ProAdvance Similac 360 Total Care Similac Pure Bliss (19 kcal/oz)	Routine formula for full-term infants 48:52 whey-to-casein ratio Contains prebiotics <ul style="list-style-type: none"> • Similac ProAdvance contains 2'-FL HMO prebiotic • Similac 360 Total Care contains a blend of 5 HMO Prebiotics and is Non-GMO • Similac Pure Bliss is Non-GMO
	Bobbie	Routine formula for full-term infants 60:40 whey-to-casein ratio Organic and Non-GMO Marketed as a European-style formula: no rice syrup, includes coconut oil
	Nutricia Fortini	High calorie for full-term infants *contains milk and soy Ready-to-Feed at 30 kcal/oz, limiting mixing errors Lower osmolality than concentrated standard infant formulas



Cow's Milk Based Pediatric Formulas

- Children 1-13 years of age requiring tube feeding or oral supplements
- 30 and 45 kcal/oz
- Reduced calorie options



Cow's Milk Based Formulas		
Indications	Formula Names	Helpful product information
Children 1-13 years of age, requiring tube feeding or oral supplements	Pediasure and Pediasure 1.5	Available with or without fiber Available as institutional, retail, and enteral
	Nutren Junior	Contains 50% whey protein Available with or without fiber
	BOOST Kid Essentials and BOOST Kid Essentials 1.5	Boost Kid Essentials 1.5 available with or without fiber
	Pediasmart Dairy Beverage Mix	Organic, powder based, complete nutritional beverage Contains no corn syrup, suitable for lactose intolerance
	Pediasure Sidekicks	For children needing lower calorie feeding 22.5 calories/oz Contains fiber
	Pediasure Reduced Calorie	For children needing lower calorie feeding 18.75 calories/oz Contains fiber Provides 100% of DRI for protein and 25 vitamins/minerals: 1000 ml age 1-8, 1500 ml age 9-13
Children 1-13 years of age. Oral supplement (not intended for sole source nutrition)	Orgain Kids Protein	Organic, made without soy ingredients 22.5 calories/oz
	Pediasure Grow & Gain shake mix	Preparation: 1/3 cup powder mixed with ¾ cup water (37 cal/oz prepared) for 8 ounce serving Not intended for sole source nutrition



Lactose Free & Partially Hydrolyzed Infant Formulas

- For healthy or sick infants
- Infants with increased gas or fussiness



Infants with lactose intolerance, increased gas or fussiness	Enfamil NeuroPro Sensitive	Reduced lactose and marketed for lactose sensitivity, contains 2'-FL HMO prebiotic, and is Non-GMO
	Enfamil Gentlease Enfamil NeuroPro Gentlease	80% reduced lactose compared to "standard" formulas; partially hydrolyzed protein; 60:40 whey-to-casein ration <ul style="list-style-type: none"> • Enfamil NeuroPro Gentlease contains 2'-FL HMO prebiotic, and is Non-GMO
	Similac Sensitive Similac Pro-Sensitive Similac 360 Total Care Sensitive	Reduced lactose; low osmolality (200 mOsm/kg water). 18:82 whey-to-casein ratio Non-GMO <ul style="list-style-type: none"> • Similac Pro-Sensitive contains 2'-FL HMO prebiotic • Similac 360 Total Care contains a blend of 5 HMO Prebiotics
	Similac Total Comfort Similac Pro-Total Comfort	Partially hydrolyzed whey protein Non-GMO <ul style="list-style-type: none"> • Similac Pro-Total Comfort contains 2'-FL HMO prebiotic
	Gerber Good Start Soothe	Reduced lactose; contains <i>Lactobacillus reuteri</i> 100% whey protein Non-GMO Contains 2'-FL HMO prebiotic
Constipation	Enfamil Reguline	Partially hydrolyzed protein 60:40 whey-to-casein ratio Contains blend of 2 prebiotics (PDX, GOS)



Reflux Infant Formulas

- Reflux symptoms
- Frequent spit ups
- Thickens in stomach

**Should not be used with H2 blockers (e.g. famotidine)*

<p>Frequent spit up</p> <p>Added rice starch to reduce spit-up</p> <p>Per the companies, do not concentrate >24 kcal/oz due to viscosity</p>	<p>Enfamil AR</p>	<p>BCH Feeding Team may recommend this for a patient due to its increased viscosity and in some situations >24 kcal/oz can be considered with close monitoring.</p> <p>20:80 whey-to-casein ratio</p> <p>Viscosity in bottle is 10 times higher than that of routine formula and increases when exposed to stomach acid.</p>
	<p>Similac for Spit-Up</p>	<p>Considered thin liquid by BCH Feeding Team. Non-GMO option.</p>



Soy Based Infant Formulas

- For healthy or sick infants
- 20kcal/oz

Soy Based Formulas	
<p>Indications for infant soy formula are severe lactose intolerance, galactosemia and ethical considerations (i.e vegan)</p> <p>Not recommended for:</p> <ul style="list-style-type: none"> • Premature infants • Hypothyroidism 	<p>Enfamil ProSobee Similac Soy Isomil Gerber Good Start Soy</p> <p>Organic formulas: Earth's Best Non-GMO Plant Based Soy Formula</p>



Semi-Elemental Infant Formulas

- Cow's milk protein sensitivity/allergy
- Malabsorption
- Protracted diarrhea
- Severe malnutrition
- 20kcal/oz

Extensively Hydrolyzed Formulas		
Infants with cow's milk protein sensitivity, malabsorption, protracted diarrhea, or severe malnutrition	Nutramigen	Extensively hydrolyzed protein (casein) Available liquid concentrate or ready to feed only
	Nutramigen Enflora LGG	Extensively hydrolyzed protein (casein) Contains probiotic Lactobacillus rhamnosus GG Available powder only
	Gerber Extensive HA	Extensively hydrolyzed protein (whey) Contains probiotic B. lactis 49% of fat as MCT
	Similac Expert Care Alimentum	Extensively hydrolyzed protein (casein) 33% of fat as MCT *Ready to feed version is corn free
	Pregestimil	Extensively hydrolyzed protein (casein) 55% of fat as MCT



10



Semi-Elemental Pediatric Formulas

- Malabsorption
- Protracted diarrhea
- Severe malnutrition
- Other GI conditions



Semi-Elemental Formulas		
Children 1 – 13 years of age with malabsorption **Not suitable for cow's milk protein allergy	Kate Farms Pediatric Peptide 1.0	Contains hydrolyzed pea protein, plant based, prebiotic soluble fiber, 50% MCT
	**PediaSure Peptide 1.0	Contains hydrolyzed protein (whey and casein,) 60% MCT
	**Peptamen Junior 1.0	Contains hydrolyzed 100% whey protein, 60% MCT
	**Peptamen Junior Fiber 1.0	Contains hydrolyzed 100% whey protein, 60% MCT Contains blend of insoluble and "prebio" soluble fiber
Children 1 – 13 years of age with malabsorption, high calorie needs **Not suitable for cow's milk protein allergy	Compleat Pediatric Peptide 1.5	Contains hydrolyzed pea protein, plant based, 40% MCT
	Kate Farms Pediatric Peptide 1.5	Contains hydrolyzed pea protein, plant based, prebiotic soluble fiber, 40% MCT
	**PediaSure Peptide 1.5	Contains hydrolyzed protein (whey and casein,) 60% MCT
	**Peptamen Junior 1.5	Contains hydrolyzed 100% whey protein, soluble fiber, 60% MCT
	**Peptamen Junior PHGG 1.2	Contains hydrolyzed 100% whey protein, PHGG fiber (partially hydrolyzed guar gum which is a plant based prebiotic fiber), 60% MCT (of note production stopped fall 2021 of Peptamen Junior with Prebio)
	**Peptamen Junior HP 1.2	Contains hydrolyzed 100% whey protein, soluble fiber, 60% MCT; 36 kcal/oz 16% total calories from protein vs 12% in Peptamen Jr and PediaSure Peptide

Some of these formulas are NOT hypoallergenic and contain milk protein.



Elemental Infant Formulas

- Severe cow's milk protein allergy
- Multiple food allergies
- Intolerance to protein hydrolysate formulas
- Malabsorption

Elemental (amino acid) Based Formulas		
<p>Infants with food protein intolerance or allergy, eosinophilic gastrointestinal disorder (EGID), short bowel syndrome, malabsorption</p> <p>All are hypoallergenic, nutritionally complete, and contain DHA/ARA.</p>	Neocate Infant with DHA/ARA	Contains 33% MCT
	Neocate Syneo Infant with DHA/ARA	Contains 33% MCT, contains prebiotics and probiotics
	Elecare Infant with DHA/ARA	Contains 33% MCT
	PurAmino (formerly Nutramigen AA)	Contains 33% MCT
	Alfamino Infant	Contains 43% MCT



12



Elemental Pediatric Formulas

- Multiple food allergies
- Intolerance to protein hydrolysate formulas
- Malabsorption



Elemental (amino acid based) Formulas		
Children 1+ years of age with severely impaired GI function, short bowel syndrome, malabsorption, severe food protein intolerance	Elecare Junior	Contains 33% of fat as MCT Flavors: unflavored, vanilla, chocolate, banana
	Neocate Junior	Contains 35% of fat as MCT Available with and without prebiotics. BCH carries without prebiotic version. Flavors: Neocate Junior (without prebiotics) is available in Unflavored, Chocolate, and Tropical. Neocate Junior with Prebiotics is available in Unflavored, Vanilla, and Strawberry
	Neocate Splash	Contains 35% of fat as MCT Ready to use juice box packaging Flavors: unflavored, grape, orange-pineapple, tropical fruit
	Alfamino Junior	Contains 65% of fat as MCT Flavors: unflavored, vanilla
	Puramino Junior	Contains 35% of fat as MCT Flavors: unflavored, vanilla
	Essential Care Junior	Contains 35% of fat as MCT Low FODMAP formula Flavors: unflavored, vanilla, white chocolate, citrus
	EquaCare Junior	Contains 33% of fat as MCT Higher protein (4.1g/100kcal) Flavors: unflavored, vanilla, chocolate
	Vivonex Pediatric	Standard dilution 24 kcal/oz Also appropriate for altered fat diet Fat content: 26% of total kcals (70% as MCT, 30% as LCT) Monitor for essential fatty acid deficiency
	Tolerex	Only appropriate for ages 3+ Fat content: 2% of total calories from fat (no MCT) Monitor for essential fatty acid deficiency



Premature/Premature Transitional Formulas

- <1500g birth weight
- OR <34 weeks gestational age
- High in calcium, phosphorus, iron, vitamin E, etc.

Premature Formulas (All premature formulas are cow's milk based)		
To meet the needs of low birth weight (LBW) and premature infants.	Enfamil Premature	Contains MCT oil. Nutrients may be excessive in infants taking over 14 ounces.
Available in 20, 24, 24 HP (High Protein) and 30 kcal/oz ready-to-feed. Intended for hospital use only.	Similac Special Care	Not intended for feeding LBW infants after they reach 3.6 kg. Contains MCT oil
Post discharge	Enfamil NeuroPro Enfacare	Standard dilution is 22 kcal/oz Provides higher amounts of protein, vitamins, minerals (including iron, calcium, phosphorus)
	Similac Expert Care Neosure	



Plant-based Pediatric Formulas

- Children 1-13 years of age requiring tube feeding or oral supplements
- 30, 36 and 42 kcal/oz

Plant Based Formula		
Children 1-10 years of age, requiring tube feeding or oral supplements for cow's milk allergy	Bright Beginnings Soy Pediatric Drink	100% soy protein, lactose free Complete nutrition
	Pediasmart Pea Protein Vanilla Beverage	Organic, powder based No dairy, soy or corn syrup, Complete nutrition
	Kate Farms Pediatric Standard 1.2	Organic pea protein, vanilla flavor No dairy, soy, gluten or corn Complete nutrition
	Orgain Kids Plant Protein Shake	Organic pea protein No dairy, soy or gluten
	Compleat Pediatric Standard 1.0 and 1.4	Non GMO pea protein, lactose free No dairy, soy, gluten or corn Can be used as sole source nutrition Vanilla flavor, can be consumed orally or administered by tube



Food-Based Pediatric Formulas

- Children 1-13 years of age requiring tube feeding or oral supplements
- 18, 30, 45 kcal/oz
- Not blended-food

Food-Based Formulas (not blended)		
Compleat Pediatric (ages 1-13 years)	Compleat	Includes a variety of real food ingredients (concentrates, powders), Non-GMO, nutritionally complete. No corn or soy, gluten-free, suitable for lactose intolerance. Contains milk protein
	Compleat Pediatric 1.0	
	Compleat Pediatric Reduced Calorie 0.6 kcal/ml	
Compleat Pediatric peptide (ages 1-13 years)	Compleat Peptide 1.5	Includes a variety of real food ingredients (concentrates, powders). Plant based and non-GMO ingredients. No dairy, soy, nuts or other common food allergens, no corn. Hydrolyzed pea protein, L-cysteine added, 40% MCT as fat source, nutritionally complete.
	Compleat Pediatric Peptide 1.5	



Altered Fat Infant/Pediatric Formulas

- Chylous effusion, lymphatic malformations
- Metabolic disorders
- Malabsorption with steatorrhea

Altered Fat		
Note: all formulas carry risk of essential fatty acid deficiency		
Children with chylous effusion, lymphatic malformations, long chain fatty acid oxidation disorders, hyperlipoproteinemia type 1, intractable malabsorption with steatorrhea	Monogen	22 and 30 kcal/oz standard dilutions; powdered formula Whey, casein based (29:61 whey to casein ratio) Fat content: 84% MCT, 4% of total calories from long-chain fatty acids Also used in infant population under medical supervision, does contain DHA and ARA Allergens: milk, walnuts, coconut
	Lipistart	Standard dilution 20 kcal/oz; powdered formula Whey based Fat content: 74% MCT, 8% of total calories form long-chain fatty acids Not intended as sole source nutrition Also used in infant population under medical supervision, does contain DHA and ARA Allergens: milk, soy
	Portagen	Standard Dilution 30 kcal/oz; powdered formula Casein based Fat content: 87% MCT, 5% of total calories from long-chain fatty acids Nutritionally incomplete, lacking trace elements selenium, molybdenum, copper, and carnitine Allergens: milk



Modulars

- Add calories with limited volume change
- Typically does not change micronutrient content, but not always!



Modulars		
Carbohydrate	Polycal	20 kcal per 5 gm scoop Maltodextrin
	Corn Syrup	60 kcal/Tbsp.
	Corn Starch	30 kcal/Tbsp.
	Fructose, Dextrose	45 kcal/Tbsp.
Carbohydrate and Fat/Protein	Duocal	25 kcal/scoop (5 gm) 59% carbohydrate (hydrolyzed cornstarch), 41% fat (35% MCT, 65% LCT)
	Benecalorie	330 kcal/1.5 fluid oz. (44 ml) 7gm protein (calcium caseinate) Contains Milk. Suitable for lactose intolerance but not galactosemia. Fat source is high oleic sunflower oil.
Protein	Beneprotein	25 kcal per 7 gm scoop Whey protein, soy lecithin
	Complete Amino Acid Mix	3.28 kcal/gm Balanced mixture of essential and non-essential amino acids, 5 gm powder provides 4 gm protein equivalent.
Fat	Vegetable oil, corn oil, olive oil, avocado oil	120 kcal/Tbsp. 8.1 kcal/ml
	MCT oil	7.67 kcal/ml
	Liquigen	MCT emulsion, 4.5 kcal/mL
	MCT procal	Powdered source of MCT. 112 kcal/16 gm sachet 10 gm fat (MCT), 3.3 gm carbohydrate, 2 gm protein. Contains milk

Blended Food Formulas and Blended Tube Feeding

Where the world comes for answers



Blended Food Formulas (BF)

- What are BF?
- Benefits to BF
- Nutrition considerations
- Commercial BF
- Home blended BF
 - Example Recipe
- Administration
- Monitoring



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Blended Food Formulas (BF)

- Enteral nutrition formula made from blended whole foods and liquids
 - Commercial blends
 - Home blended formulas
- Generally thicker in consistency compared to standard formulas



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Benefits to BF Diets

- Improved:
 - Upper gastrointestinal (GI) symptoms
 - Diet variety
 - Oral Intake
 - Family satisfaction
 - Microbiome
- Reduced:
 - Aspiration risk
 - Acid suppressant use
 - Healthcare utilization



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Gallagher K. et al, (2018) DOI: 10.1002/jpen.1049
Pentiuk et al. (2011) DOI: [10.1177/01486071110377797](https://doi.org/10.1177/01486071110377797)
Hron et al. (2019) doi:10.1016/j.jpeds.2019.04.023
Bennett, K et al (2020) DOI: 10.1002/ncp.10493
Soscia et al. (2021) doi: 10.1093/pch/pxab034

22



Nutrition Considerations for BF

- Homemade vs. Commercial BF
- Energy needs/provision
 - Macronutrients
 - Micronutrients: vitamins, minerals
 - Fluid intake
- Viscosity of formulas
- Administration
- Food safety
- Monitoring



Commercial BF: Available Products



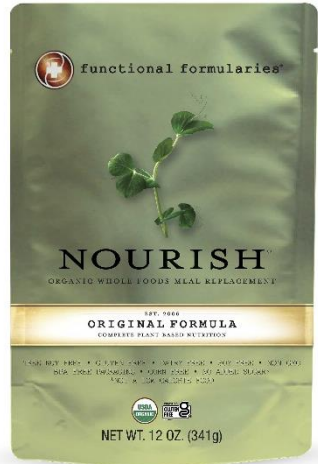
Nutrition Considerations	Real Food Blends
Age Indication	Age 1 year or older
Ingredient Composition	6 meal varieties Free of: Lactose, gluten, soy, corn, dairy, peanuts
Caloric Density	320-340 kcal per 237 ml (267 g pouch), ~41kcal/oz
Nutrient Considerations	No added vitamins and minerals added to meals High in fat (~50%); 73-81% free water Some meals have high manganese, high selenium
Administration	Bolus with syringe (recommended) Add 2-4 oz of liquid per serving for pump (2h hang time)
Considerations	Simple ingredients, easy to transport Variety of food intake/provision Closest commercial formula to home blended formula Supplement vitamins and minerals, extra free water



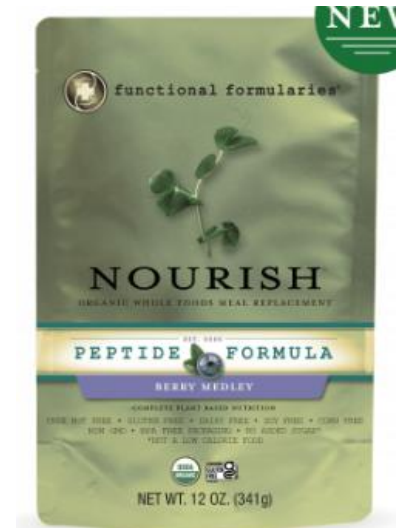
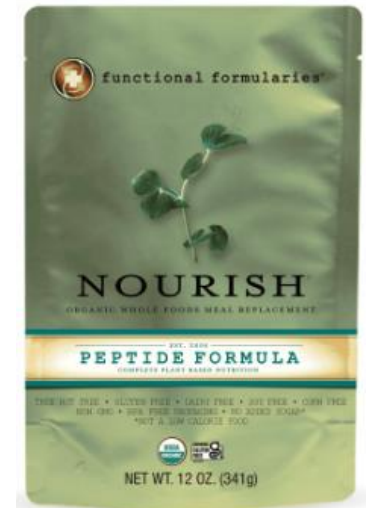
Nutrition Considerations	Compleat Pediatric Organic Blends: Chicken Garden	Compleat Pediatric Organic Blends: Plant Based
Age Indication	1-13 years of age	
Ingredient Composition	Blended whole foods including chicken, hydrolyzed pea protein Free of: Top 8 allergens, lactose, gluten.	Blended whole foods including hydrolyzed pea protein Free of: Top 8 allergens, lactose, gluten.
Caloric Density	360 kcal per 300 ml pouch (1.2 kcal/ml), ~36kcal/oz	
Nutrient Considerations	900 mL meets or exceeds 100% DRI of 25 key vitamins & minerals for ages 1-8 y.o.; 1200 mL for ages 9-13 y.o. Free water content 82%.	
Administration	Pump or bolus. May need to dilute for pump. Hang time 8 hours; 4 hours if fluid is added	
Considerations	Nutritionally complete Limited variety of foods	



Nutrition Considerations	Functional Formularies: Nourish
Age Indication	Age 1 year or older
Ingredient Composition	Vegan, pea protein Free of: Dairy, gluten, soy, tree nuts, peanuts, egg, wheat, corn; fruit
Caloric Density	1.13 kcal/ml, 34kcal/oz 400 calories per 341 g pouch (approximately 340-355 ml)
Nutrient Considerations	3 pouches meets 100% DRI of 26 vitamins & minerals for age 4-8 y.o. High in Vitamin A (majority carotenoids), copper, and manganese. Low in Phosphorus. 68% free water (242mL per pouch)
Administration	Pump, gravity or bolus. 12 hour hang time (4 hours if fluid is added)
Considerations	Able to run on pump without diluting Monitor micronutrient intake and levels, limited variety



Nutrition Considerations	Functional Formularies: Nourish Peptide	Functional Formularies: Nourish Peptide Berry Medley
Age Indication	Age 1 year or older	
Ingredient Composition	Hydrolyzed pea protein Vegan; no fruit Free of top 8 allergens, corn & gluten	Hydrolyzed pea protein Pumpkin seed protein Vegan; 2 servings fruit & veg/pouch Free of top 8 allergens, corn & gluten
Caloric Density	1.46kcal/mL, ~44kcal/oz 520 kcal per 341 g pouch (approximately 340-355 ml)	
Nutrient Considerations	3 pouches meets 100% DRI of 26 vitamins & minerals for age 4-8 y.o. High in Vitamin A (majority carotenoids), copper, and manganese. Low in Phosphorus. 70% free water (242mL per pouch)	
Administration	Pump, gravity or bolus. 12 hour hang time (4 hours if fluid is added)	
Considerations	Able to run on pump without diluting, high calorie concentrations Monitor micronutrient intake and levels, limited variety	



Homemade BF



Considerations for starting Homemade Blended Formula

- Age (1y +) and medical stability
- Able to meet calorie and protein needs from homemade blended formula recipe
- Caregiver capacity
- Kitchen facilities, blender type
- Food safe preparation and storage



Home Blended Formula Equipment

- Standard Kitchen Blender
 - Recipes including baby foods, soft/canned foods
- High-powered (industrial/commercial) Blender
 - Recipes including more textured foods (meats, nuts, etc.)
 - Vitamix, Blendtec



<https://www.chrichmond.org/services/gastroenterology-and-nutrition/food-based-enteral-nutrition-support>

31



Home Blended Formula: Recipes

- Flexible, customizable → variable
- Generally, goal to include:
 - Calcium/Vitamin D source
 - Protein source
 - Grain/starch source
 - Fruits
 - Vegetables
 - Fats



<https://www.chrichmond.org/services/gastroenterology-and-nutrition/food-based-enteral-nutrition-support>

32



Home Blended Formula: Example Recipe & Analysis

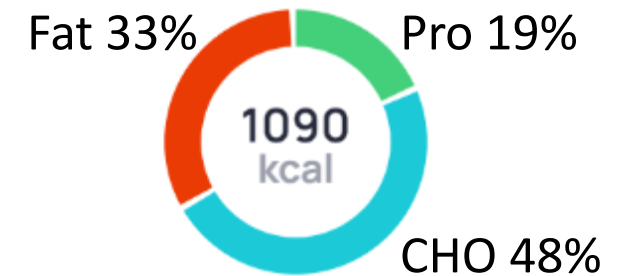
Home Blend Recipe: Makes ~ 930mL (31oz), ~1125kcal/recipe		
Measurement	Generic Ingredient	Ingredient
½ cup	Juice	Prune Juice (unsweetened)
1 ½ cup	Milk/Milk Alternative	Oat milk (130kcal/cup)
4oz	Protein	Beef, chicken, turkey, salmon, etc.
¾ cup	Grain 1	Cooked white rice, pasta, sweet/white potato
¼ cup	Grain 2	Dry oats
½ cup	Fruit 1	Pear, pineapple, berries, peach, kiwi, etc.
¼ cup	Fruit 2	Banana, Unsweetened applesauce (no sugar added)
1 cup	Vegetables	Green Beans, carrots, broccoli, cauliflower, etc.
1/4 cup	Fat 1	Mashed avocado or Full Fat Canned Coconut milk
1 TBSP or 2 TBSP	Fat 2	2 TBSP Peanut butter/tree nut butter/seed butter Or, 1 TBSP olive oil/vegetable oil



Home Blended Formula: Example Recipe


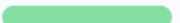

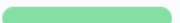

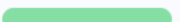

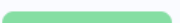



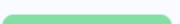
- How much does 30oz (900mL) provide?
- Kcal/oz, total calories
 - $930\text{mL} = 31\text{oz}$ $1125\text{mL}/31\text{oz} = 36\text{kcal/oz}$
 - $30\text{oz} \times 36\text{kcal/oz} = 1080\text{kcal}$
- Fluid (generally assume HBF =75% free water)
 - $900\text{mL} \times 0.75 = 675\text{mL}$ free water
- Comparable commercial formula?
 - **Compleat Pediatric Organic Blends (36kcal/oz)**


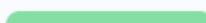

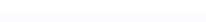
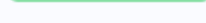



Energy Summary



Home Blended Formula: Example Recipe

Would you supplement anything (1-3 yo)?

Vitamins			% RDA
B1 (Thiamine)	0.5 mg		101%
B2 (Riboflavin)	1.4 mg		285%
B3 (Niacin)	16.5 mg		275%
B5 (Pantothenic Acid)	3.3 mg		166%
B6 (Pyridoxine)	1.4 mg		280%
B12 (Cobalamin)	3.3 µg		366%
Folate	190.2 µg		127%
Vitamin A	1246.5 µg		415%
Vitamin C	90.0 mg		600%
Vitamin D	212.9 IU		35%
Vitamin E	5.9 mg		98%
Vitamin K	139.7 µg		466%

Minerals			% RDA
Calcium	676.4 mg		97%
Copper	0.6 mg		182%
Iron	7.9 mg		113%
Magnesium	172.0 mg		215%
Manganese	2.6 mg		218%
Phosphorus	946.9 mg		206%
Potassium	2381.4 mg		119%
Selenium	49.3 µg		246%
Sodium	910.3 mg		114%
Zinc	7.2 mg		238%

Commercial vs. Homemade Blended Formula



Considerations	Home Blended Formulas	Commercially Available Blended Formulas
Clinical Symptom Improvement	Shared improvement in GI symptoms and feeding tolerance	
Variety of Foods	Can incorporate a wide variety More customizable, family foods	Smaller variety, brand dependent
Caloric Density	More variable	More precise
Nutritional Content	More variable Mimics oral intake	More precise/less variability
Vitamin/Mineral Supplementation	Not supplemented with vitamin/minerals	Varied supplementation across brands



Considerations	Home Blended Formulas	Commercially Available Blended Formulas
Viscosity	Varies, generally thicker	More consistent in thickness Brand/Blend Dependent
Effort	More time/effort intensive More difficult to transport	Less time/effort intensive Easier to travel transport
Access to Resources	Cost of high powered blender Less expensive (if commercial blends not covered)	Insurance coverage varies DME* supply varies
Food Safety	Perceived higher risk Hang time 2 hours Refrigerate up to 24h, freeze >24h	Perceived Lower Risk Hang time 4+ hours

Hron B, Rosen R. JPGN 2020;70(6):e124-e8.

Boullata JI et al. ASPEN 2017;41(1):15-103.

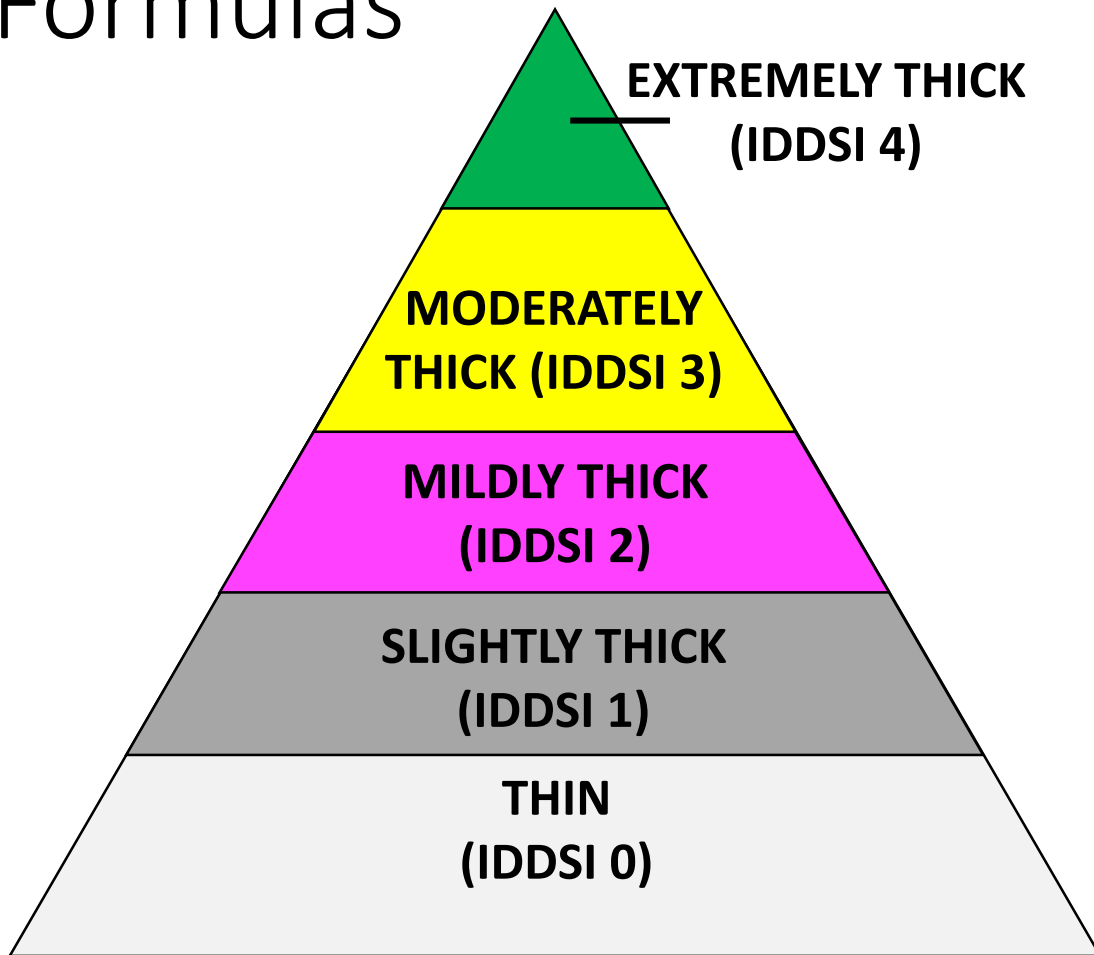
Santos DCD et al. Nutrition Reviews 2022;80(6):1580-98

Oparaji J-A et al. Gastroenterol Res. 2019; 12(3):111-114

*DME = Durable Medical Supply Company



Viscosity of Commercial and Home Blended Formulas



IDDSI Framework

Chicero et al., Dysphagia, 2017

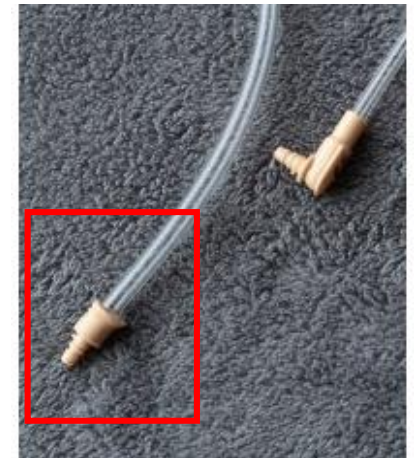
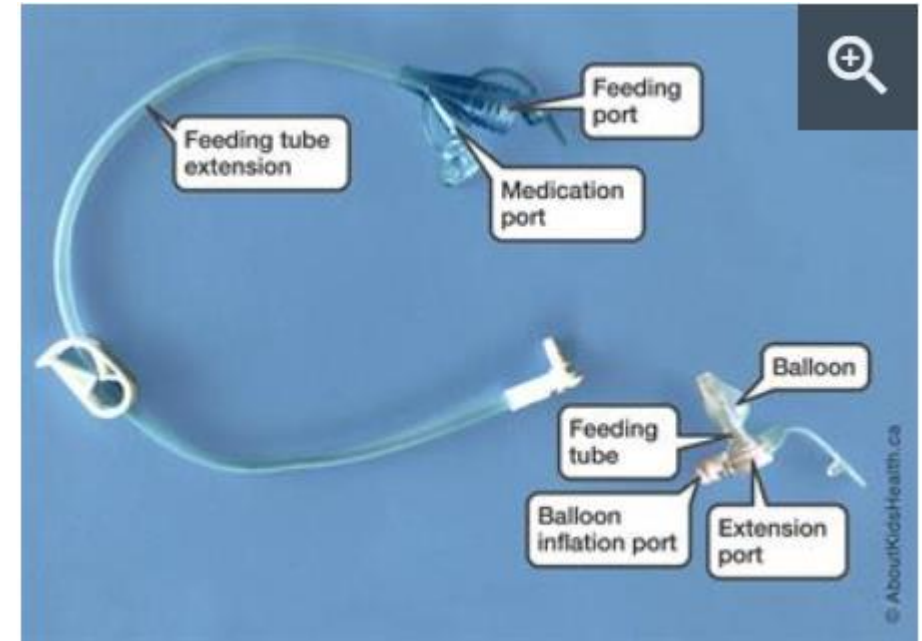
	Home Blend from Whole Foods Real Food Blends: Chicken, Beef, Quinoa
	Home Blend from Baby Foods Home Blend with Formula Base Compleat Organic Blends: Chicken Liquid Hope
	Nourish Pediasure 1.0 + 1 teaspoon rice cereal per 1oz
	Pediasure Harvest*
	Kate Farms Pediatric 1.2 Compleat Pediatric Pediasure 1.0 Pediasure 1.5 Elecare Jr. + 1 teaspoon rice cereal per 1oz Elecare Jr. + 1 teaspoon oat cereal per 1oz

Hron B, Rosen R. JPGN 2020;70(6):e124-e8.

**discontinued*

BF Administration

- GT Size:
 - 14 French size typically recommended
- Jejunal feeds not recommended unless reviewed by MD/RD
- Syringe bolus preferred
 - Straight-angle extension
- Consider hang times for home blends, Real Food Blends



Oparaji J-A et al. Gastroenterol Res. 2019; 12(3):111-114



Monitoring Nutrition Status

- Routine follow-up visits
- Anthropometrics
- GI symptoms
- Biochemical data, lab values
- Repeat nutritional analysis and adjust as needed



Suggested Labs

- Complete Blood Count
- Chem-10 Panel
 - Calcium, Magnesium, Phosphorus
- 25(OH) Vitamin D
- Vitamin A, retinol binding protein (RBP)
- C-reactive protein (CRP)
- Iron studies:
 - Serum iron, Total iron binding capacity (TIBC), Ferritin, Transferrin
- Zinc
- Copper, Ceruloplasmin
- Carnitine (vegan blends)



Thank you!

Where the world comes for answers

