

Choosing the Right Milk Formula for Your Paediatric Patient†

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Today, milk formulas have evolved to not just daily nutrition, but also as part of the essential medical treatment, or what we term as nutritional therapy. Clinical situations where the physician may consider using specialised milk formulas are: (i) conditions that inhibit any one or combination of processes involved in nutrition—ingestion, digestion, absorption and metabolism; and/or (ii) diseases where nutritional therapy acts as a medical intervention to prevent, delay or reduce medical complications or sequelae. Examples are inborn errors of metabolism, severe malabsorptive syndromes (e.g. short bowel syndrome, congenital enteropathy), food allergies, Crohn's disease and gastro-oesophageal reflux disease.

Before starting a patient on a specialised milk formula, there are many factors to consider: Is this milk formula supplying supplemental or total nutrition? What are the nutrients and energy needs for this patient? How is the intestinal function? Does the patient have any food allergies? What is the osmolality of the chosen milk formula and is it appropriate? How is the milk given? Is the taste acceptable by the patient? What is the cost of the formula? And lastly, a dietician's input is often needed for a more detailed calculation of calories and nutrient requirements.

The list of specialised milk formulas is exhaustive (Table 1). They include: (i) energy-dense formulas designed for preterm neonates and fussy-eating children to boost calories intake; (ii) nutritionally-complete formulas targeted at patients on mainly milk intake; (iii) formulas with different extents of protein hydrolysis for different indications (such as prevention of atopic dermatitis,¹ treatment of severe intestinal malabsorption and food allergies); (iv) formulas with additional individual components such as branch-chain amino acids,² medium chain triglycerides, transforming growth factor-beta,^{2,3} fibre etc.; (v) formulas restricted in certain contents such as protein or specific amino acid restricted, and carbohydrate restricted; and many more. Also, a possible glimpse into the future of milk formulas as we are aware of immune modulating formulas⁴ supplemented with arginine, glutamine and omega-3 fatty

Table 1. Types of Specialised Milk Formulas

Categories Of Milk Formulas	Some Examples
High calorie formula	Similac SpecialCare®, Neosure, Pediasure, Progress Gold, Promise, Nutren Junior, Nutren Opimum, Ensure, Eneral Plus
Nutritionally complete formula	Pediasure, Resource Just for Kids, Sustagen Junior, Ensure, Isocal, Resource Standard, Resource Plus, Nutren Optimum, Eneral Plus, Ensure Plus
Partially hydrolysed formula	Nan HA, Enfalac HA, Mamil Gold HA, Similac TotalComfort
Extensively hydrolysed formula	Alfare, Pregestimil, Nutramigen, Similac Alimentum, Pepti-junior, Peptamen Junior, Peptamen
Elemental formula	Neocate, Comidagen, Neocate Advanced, Comidagen Plus, Elemental 028 Extra, L-Emental
Branched chain amino acid enriched formula	Generaid Plus, Hepatic-Aid II
MCT enriched formula	Monogen, Portagen
Antiregurgitation formula	Enfalac AR, Frisocomfort, Similac RS
Fibre enriched formula	Nutricomp Fiber, Jevity
Protein restricted formula	Suplena, Nepro, Nutricomp Renal
Specific amino acid restricted formula	Camino pro® BetterMilk™ with Glytactin, Camino PRO® Amino acid, MSUD diet powder
Carbohydrate restricted formula	Glucerna, Glucerna SR, Nutren Diabetes, Nutricomp diabetes, Resources Diabetes
Carbohydrate minimal formula	3232A protein hydrolysate formula base, RCF
Immune modulating formula	Impact, Immune-Aid, Immunex Plus

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acids which have been found to be beneficial in certain adult patients. However, current studies looking at such supplementation of glutathione and arginine in children patients have yet to show any definite benefits at this moment.

In conclusion, it is important not to neglect the nutritional needs of the child particularly in the catabolic state of acute/chronic illness. Nutritional therapy definitely has a crucial role in prevention of malnutrition and sequelae of sepsis, and perhaps alleviation of the disease as well.

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