

# The effect of a low calorie, nutrient dense formula on the use of modular nutrition supplements in children with developmental disabilities

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## Introduction

- Subgroups of pediatric patients with neurological impairments or neuromuscular disorders expend very little energy and are susceptible to excessive weight gain.
- Many of these children are dependent upon enteral tube feedings to meet all or part of their nutritional needs and may need to maintain an energy intake of less than 800 kcal/day.
- As standard enteral formulas for children traditionally meet protein and energy needs for children in approximately 1000 calories, these formulas are often manipulated to meet protein and other nutrient requirements without exceeding energy needs. This may involve the use of a base enteral formula plus additives such as protein modulators, vitamins, minerals and water.

## Primary Objective

- To assess the impact of a low calorie, high protein, micronutrient enhanced enteral product on types and quantities of modular nutrition supplements required to meet nutritional needs.

## Methodology

- Children aged 1-13 years old with development disabilities who were currently tolerating enteral feeding, and clinically assessed to have low energy needs for their age (based on a history of maintaining 50-90th% weight-for-age on the Kennedy Krieger Growth Charts while consistently receiving less than their estimated energy requirement) were enrolled in this 24-day prospective study of a low calorie enteral formula.
- Following consent and enrollment, data were collected on:
  - Tolerance, use of modular nutrition supplements, time to prepare formula for administration and adverse events.
- For the first three days, this data was collected while the subjects were receiving their usual enteral nutrition (EN) regimen.
- Formula was changed to the low calorie formula without a transitional period. For 21 days, subjects received the low calorie EN formula (Compleat® Pediatric Reduced Calorie, Nestlé Health Science) and the same data points were retrieved.

## Results

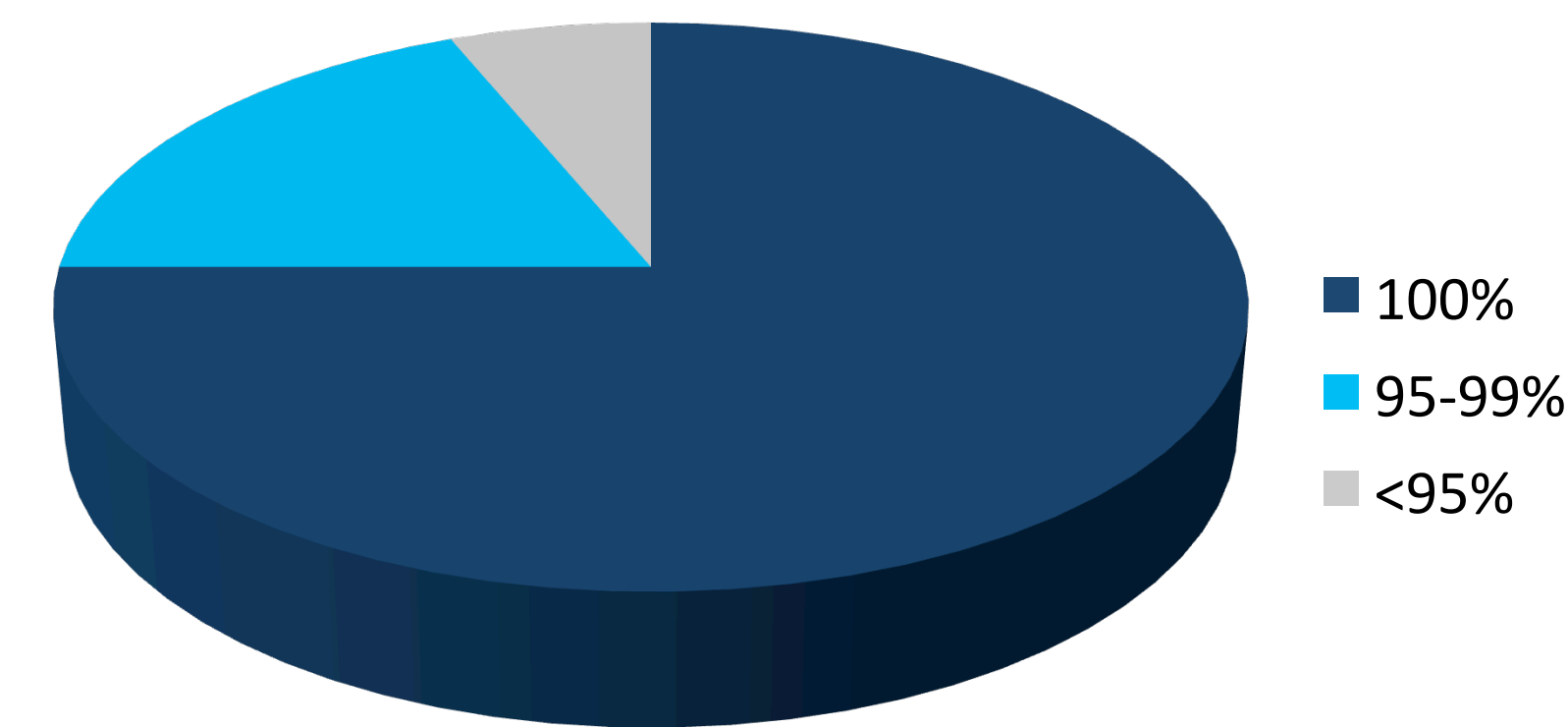
- Sixteen children aged 1-12 years (median age 4.69y) were enrolled in the study.
- Prior to initiation of the study formula all subjects were receiving at least one modular supplement or water, and 94% were receiving two or more. Modulators included protein supplements, multivitamins, vitamin D, calcium and free water. Following initiation of study formula no additional water or modular supplements were used to meet the patients' nutrient and fluid needs.
- Caloric goals were met 97% of time on the study formula in all patients and 12 patients had energy needs met 100% of the time. The remaining four patients met 61-95% of goal on the days when 100% of goal was not met.
- There was no difference in time to prepare the formula between the two formulas (1.64 vs. 2.03 minutes).
- There were no serious adverse events that occurred during the course of the study. No abnormal stool patterns, episodes of vomiting, or other signs of intolerance were documented.

## Patient Demographics

Age, years	6.52 ± 3.92
Gender male (female)	10 (6)
Diagnosis:	
Cerebral Palsy	5
Encephalopathy/ Brain Injury	4
Prematurity/ Chromosomal Abnormalities	7

Modular	Baseline n (%)	Following Initiation of low calorie formula n (%)
Water	16 (100%)	0 (0%)
Protein Supplement	6 (38%)	0 (0%)
MVI	7 (44%)	0 (0%)
Fat Soluble Vitamin Replacement	1 (6%)	0 (0%)
Vitamin D	7 (44%)	0 (0%)
Calcium	3 (19%)	0 (0%)
Selenium	1 (6%)	0 (0%)
Glucose Supplement	1 (6%)	0 (0%)

Percentage of Caloric Needs Met over the Study Period



## Nutrient needs

Calorie Needs	560-1177 kcal
Protein Needs	17-76g

## Conclusion

A reduced calorie, nutrient dense enteral formula used in a population of hypometabolic, developmentally disabled children was safe and well tolerated. This product, which met the nutritional requirements of the children, and eliminated the need for formula manipulation, offers a tailored approach to the needs of hypometabolic children requiring tube feeding.