

Health Economic Benefits of Real Food Tube Feeding Formulas Compared to Standard Tube Feeding Formulas in Post-Acute Pediatric Patients

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BACKGROUND

- Enteral nutrition (EN) is crucial for the treatment of individuals with functional gastrointestinal tracts who are unable to consume adequate nutrients orally.¹⁻³
- EN is often initiated during acute care in the hospital setting but may be continued as part of post-acute care.⁴
- The prevalence of home enteral nutrition (HEN) as part of post-acute care in the US has increased in recent decades due to its clinical and economic benefits.⁵
- Healthcare professionals, patients, and caregivers are requesting tube feeding formulas including more real food and recognizable ingredients.^{1,6}
- Intolerance of tube feeding formulas can be a challenge in patients receiving HEN, potentially leading to increased healthcare resource utilization (HCRU) and associated costs.^{7,8}
- Commercially blenderized tube feeding formulas (CBTF) containing a variety of real foods are suitable, and often preferred, for patients who have difficulty tolerating standard tube feeding formulas (STD-TF), including plant-based standard formulas that do not contain real food.¹

OBJECTIVES

- The study objective was to conduct HCRU and cost analysis of CBTF compared with STD-TF in post-acute care pediatric patients.

METHODS

- This was a retrospective, observational study, conducted using data from the Decision Resources Group Real World Evidence Data Repository, which covers 98% of US health plans and includes medical and pharmacy claims.⁹
- Patients age 1-14 years, with a prescription of either CBTF (Compleat® Pediatric Organic Blends, Nestlé HealthCare Nutrition, US) or plant-based STD-TF (Kate Farms® Pediatric Standard 1.2, Kate Farms Inc., US) between 1 Jan 2018 and 30 Dec 2020 were included.
- The index date was defined as the date of hospital discharge. Outcomes were compared at 84 days post-index between the two groups.
- HCRU and associated costs were compared using descriptive statistics (median, mean, and standard deviations) and the appropriate univariate statistical test (chi-square, t-test, or non-parametric test) at the alpha=0.05 level of significance to compare the CBTF and STD-TF groups.
- Adjusted costs were calculated using a multivariate generalized linear model adjusted for age, gender, and Charlson comorbidity index (CCI) score.

RESULTS – PATIENT CHARACTERISTICS

- Study included 469 patients in the CBTF group (44% female, mean [standard deviation (SD)] age at index date 5.17 [3.32] years), and 595 in the STD-TF group (40% female, mean [SD] age at index date 4.96 [3.34] years). There were no statistically significant differences between the two groups in mean age or gender.
- Most common diagnoses in the pre-index period were diseases of the digestive system (CBTF 81%, STD-TF 85%); respiratory system (CBTF 78%, STD-TF 82%); and congenital malformations, deformations, and chromosomal abnormalities (CBTF 76%, STD-TF 69%).
- Fifty-nine percent of patients in the CBTF group had at least one CCI comorbidity compared with 58% in the STD-TF group. Of these, 88% in the CBTF group had CCI scores of 1-2 compared with 84% in the STD-TF group; 10% in the CBTF group had CCI scores of 3-4 compared with 12% in the STD-TF group; 1% of patients in the CBTF group had CCI scores ≥5 compared with 4% in the STD-TF group.
- Mean CCI score was CBTF 1.6, STD-TF 1.8, p=0.016. (Table 1).

RESULTS – HCRU BY VISIT TYPE

- At 84 days post-index, the mean total number of visits per patient (28 visits per CBTF patient vs 96 per STD-TF patient, p<0.001), visits to outpatient (18 vs 73, p<0.001), inpatient (5 vs 11, p=0.001), emergency departments (1 vs 2, p<0.001), and other places of service, including assisted living, intermediate care, and unidentified facilities (3 vs 9, p=0.005), were significantly lower for the CBTF group compared with the STD-TF group (Figure 1).
- A significantly higher proportion of patients receiving STD-TF required inpatient visits, emergency department visits, urgent care, and visits to other places of care than those receiving CBTF (all p<0.001). Most patients in both groups required outpatient visits (100% in the CBTF vs 97% in the STD-TF group) (Figure 2).

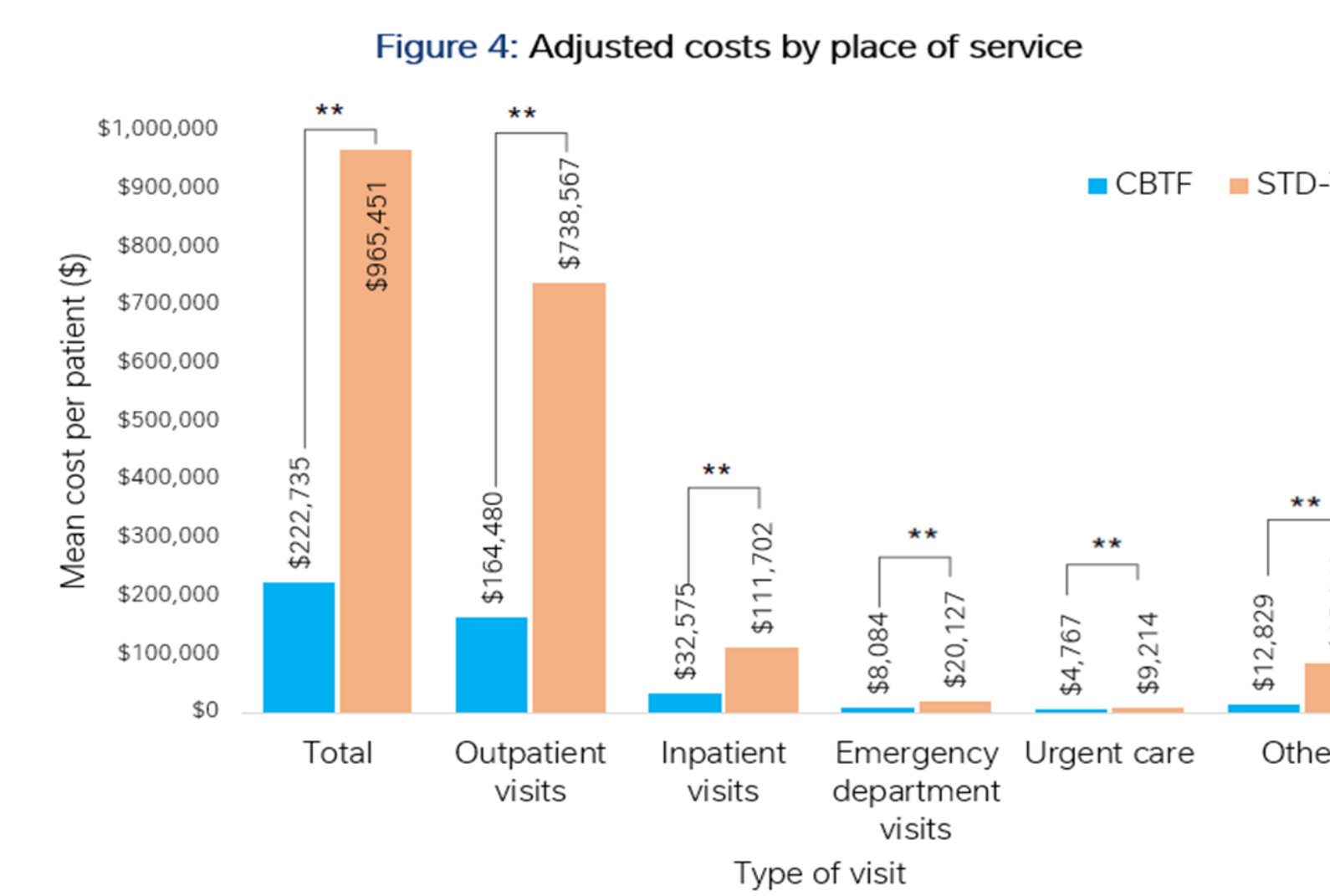
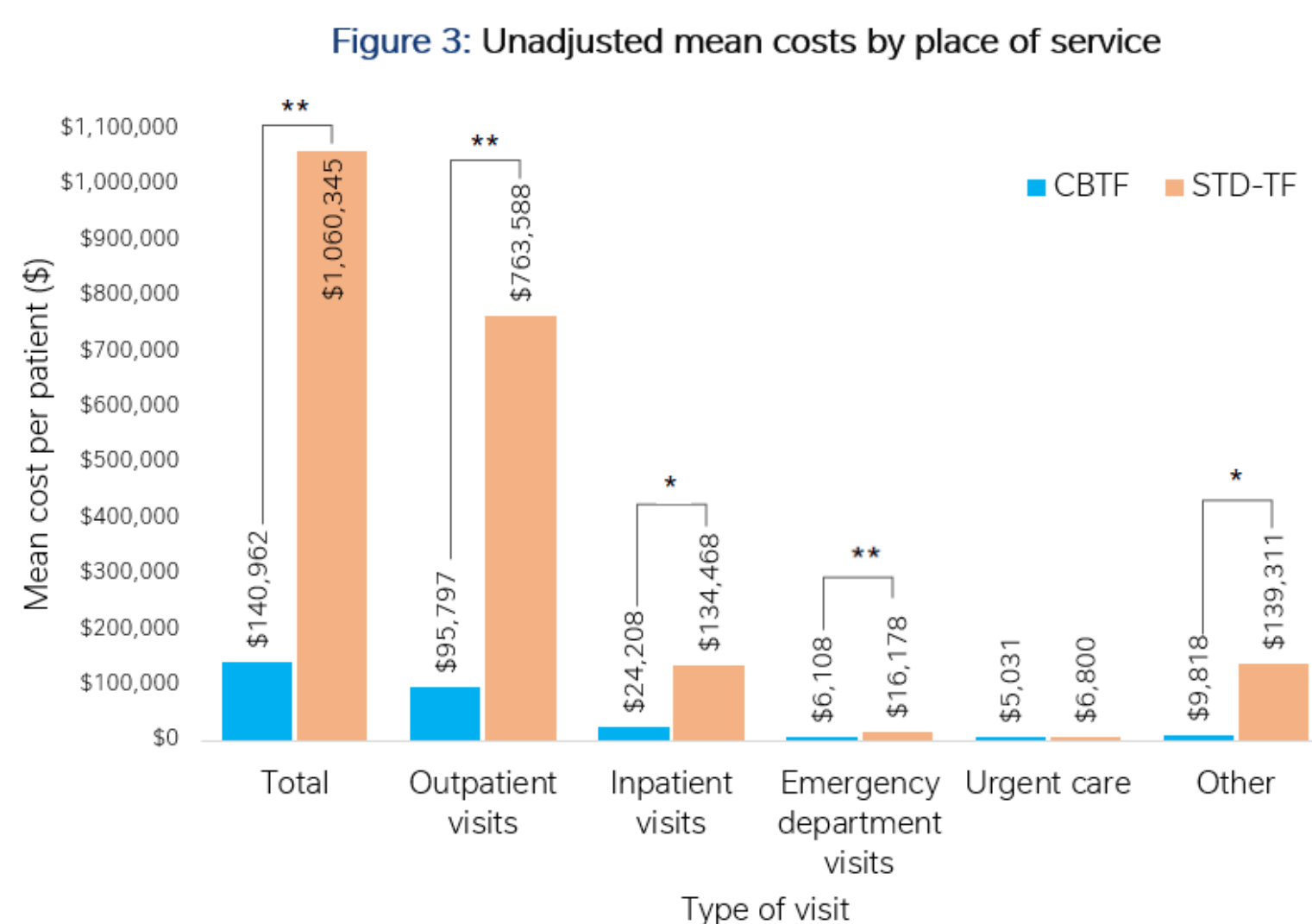
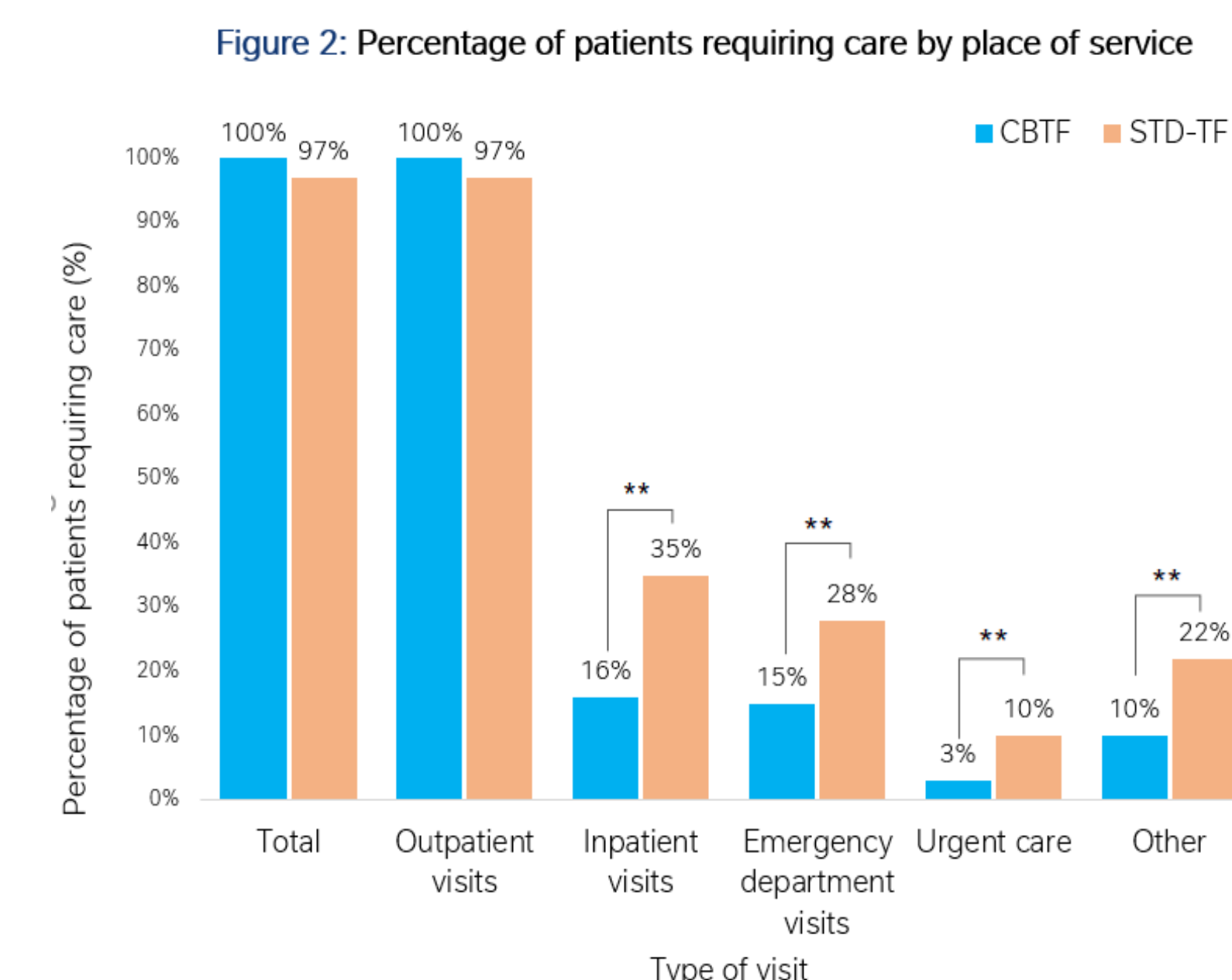
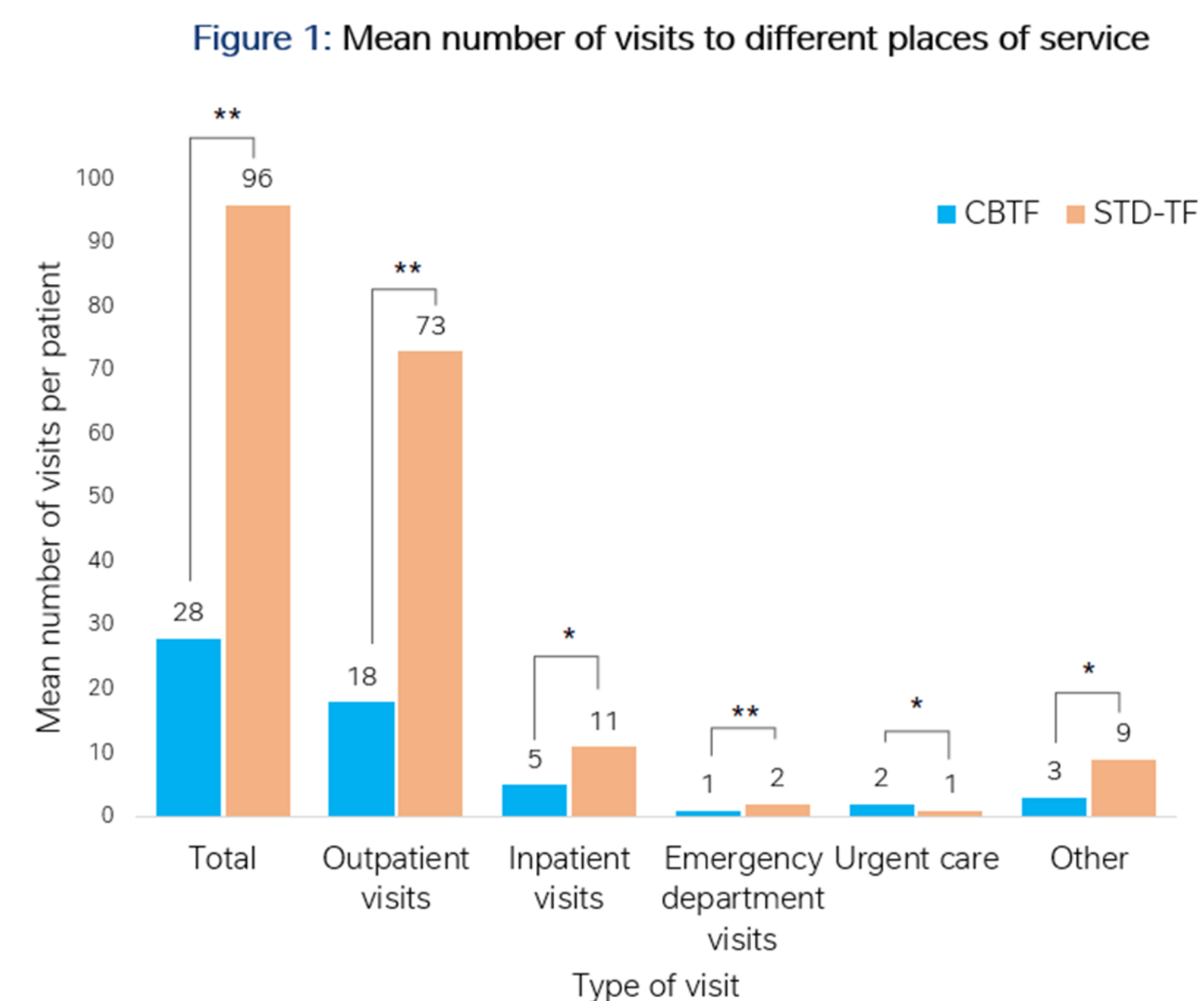
RESULTS - COST OF CARE BASED ON VISIT TYPES

- Total unadjusted costs of healthcare visits were significantly lower in the CBTF group (\$140,962) compared with the STD-TF group (\$1,060,345, p<0.001) (Figure 3).
- After controlling for age, gender and CCI score, significantly lower adjusted costs attributed to inpatient visits (CBTF adjusted value \$32,575, STD-TF \$111,702, p<0.001), outpatient visits (CBTF \$164,480, STD-TF \$738,567, p<0.001), urgent care (CBTF \$4,767, STD-TF \$9,214, p<0.001), and other visits (CBTF \$12,829, STD-TF \$85,842, p<0.001) were recorded for the CBTF group compared with the STD-TF group (Figure 4).

CONCLUSION

- A CBTF containing a variety of real foods prescribed in post-acute care was associated with fewer visits (percentage of patients requiring care) to healthcare providers and reductions in unadjusted mean costs attributed to those visits compared with a plant-based STD-TF.
- Post-acute care pediatric patients prescribed a CBTF had lower inpatient, outpatient, urgent care, and other mean visits than those prescribed a plant-based STD-TF.
- Pediatric patients prescribed CBTF in post-acute care had significantly lower adjusted costs associated with inpatient visits, outpatient visits, emergency department, urgent care, and other services compared with those prescribed a STD-TF.

Commercial blenderized enteral formulas with real food ingredients are associated with significant reductions in HCRU and economic burden in post-acute care pediatric patients compared with a plant-based standard tube feeding formula



Abbreviations: CBTF, commercial blenderized tube feeding formula; STD-TF, standard tube feeding formula. *p<0.05, **p<0.001, t-Test, alpha=0.05.

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	CBTF (N=469)	STD-TF (N=595)	P-value	
Mean age, years (SD)*	5.17 (3.32)	4.96 (3.34)	0.292	
Gender, n (%)			0.174	
	Female	207 (44)	238 (40)	
Most common Charlson comorbidities, n (%)†	Chronic pulmonary disease	131 (28)	183 (31)	0.316
	Paraplegia and hemiplegia	132 (28)	158 (27)	0.563
	Cerebrovascular disease	33 (7)	43 (7)	0.905
Mean CCI score (SD)‡	1.6 (0.9)	1.8 (1.5)	0.016	

Abbreviations: CCI, Charlson comorbidity index; CBTF, commercial blenderized tube feeding formula; SD, standard deviation; STD-TF, standard tube feeding formula. †Calculated at hospital discharge. ‡Assessed during the year prior to hospital discharge.