Chronic Conditions In Children Receiving Commercially Blenderized Tube Feeding Formula In The Post-Acute Care Setting: Real World Evidence Of Clinical And Health Economic Outcomes

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BACKGROUND

- Intolerance to tube-feeding formulas can be a challenge and lead to increased healthcare resource utilization (HCRU) and associated costs in patients receiving home enteral nutrition (HEN).[1,2]
- Use of commercial blenderized tube feeding (CBTF) formula in post-acute care patients has demonstrated significant clinical and health economic benefits.[1,2]

OBJECTIVE

- Describe clinical and health economic outcomes among pediatric patients diagnosed with specific chronic conditions such as failure to thrive/malnutrition, diseases of the digestive system, cerebral palsy & seizures and receiving CBTF in a post-acute care setting.

METHODS

- Retrospective study (January 1, 2018 - December 31, 2020) using nationally representative US claims data obtained from the Decision Resources Group Real World Evidence Data Repository.
- Inclusion criteria were children (1-14 years of age) receiving a CBTF (Compleat® Pediatric Organic Blends, Nestlé HealthCare Nutrition, US) as sole-source nutrition for ≥7 days in post-acute care.
- Gastrointestinal (GI) intolerance and HCRU were compared in pre-index (within 1 year before discharge date) and post-index (last record in study period at 28, 84, and 168-days post-discharge).
- Patient characteristics, diagnoses and comorbidities, concomitant medication use, GI intolerance symptoms, HCRU (outpatient, inpatient, urgent, emergency department (ED) visits and visits to other places of services) and cost of care were assessed.

RESULTS

- Study included 469 children (44% female; mean [standard deviation (SD)] age 5.2 [3.32] years) from all US regions.
- Patient characteristics and clinical comorbidities are previously reported.[3]
- Nearly 70% of patients were diagnosed with failure to thrive/malnutrition, 92% diseases of the digestive system, 42% cerebral palsy and neuromuscular disorders and 32% seizure disorders.

RESULTS – HEALTHCARE RESOURCE UTILIZATION AND COSTS

- Significant reductions of mean total number of visits and associated costs were observed in patients with malnutrition, digestive system, cerebral palsy and/or seizure diagnoses **(Table 2).**
- Significantly (p<0.05) fewer children diagnosed with digestive diseases required inpatient (37% vs 9%); outpatient (100% vs 75%) and emergency department visits (11% vs 3%) at 168 days post-index.
- Mean outpatient visits were significantly decreased (p< 0.05) at 168 days post-index for children diagnosed with malnutrition (11 vs 5), diseases of the digestive system (15 vs 7), cerebral palsy (17 vs 7) and seizures (15 vs 6).
- Significant reductions in HCRU transformed into significant cost savings. Mean total costs at 168 days post-index were significantly (p<0.05) lower in patients diagnosed with malnutrition ($127,839 vs $105,291), digestive diseases ($201,406 vs $110,618), cerebral palsy ($220,334 vs $98,029) and seizure disorders ($170,055 vs $89,031).

In children diagnosed with malnutrition, diseases of the digestive system, cerebral palsy or seizures, a commercial blenderized enteral formula was well tolerated and resulted in significant improvements in clinical and HCRU outcomes

Table 1. Pediatric patients experiencing GI intolerance symptoms pre-index and 28-, 84-, 168-days post-Index according to main diagnosis

GI Intolerance Symptoms	Malnutrition N=331				Digestive System N=435				Cerebral Palsy N=195				Seizure N=153			
	Pre-index	Post-index			Pre-index	Post-index			Pre-index	Post-index			Pre-index	Post-index		
		28-days	84-days	168-days		28-days	84-days	168-days		28-days	84-days	168-days		28-days	84-days	168-days
3 or more Symptoms	20%	**2%***	**3%***	**5%***	18%	**1%***	**3%***	**4%***	19%	**1%***	**3%***	**5%***	20%	**1%***	**4%***	**7%***
Constipation	38%	**13%***	**16%***	**19%***	38%	**12%***	**16%***	**19%***	50%	**16%***	**21%***	**23%***	63%	**16%***	**21%***	**24%***
Nausea & Vomiting	40%	**8%***	**10%***	**13%***	38%	**8%***	**11%***	**13%***	37%	**6%***	**8%***	**9%***	47%	**7%***	**8%***	**11%***
Abdominal pain	16%	**1%***	**2%***	**4%***	15%	**2%***	**2%***	**4%***	11%	**1%***	**2%***	**3%***	14%	**1%***	**2%***	**4%***
Diarrhea	18%	**2%***	**3%***	**5%***	17%	**2%***	**3%***	**4%***	16%	**0%***	**1%***	**1%***	20%	**1%***	**2%***	**3%***
Flatulence	12%	**2%***	**2%***	**3%***	12%	**2%***	**2%***	**3%***	12%	**2%***	**2%***	**3%***	16%	**1%***	**2%***	**3%***
Gagging & Retching	10%	**1%***	**2%***	**3%***	10%	**1%***	**3%***	**3%***	12%	**3%***	**3%***	**4%***	15%	**2%***	**3%***	**4%***
Abdominal Distention	10%	**1%***	**2%***	**3%***	9%	**1%***	**2%***	**3%***	9%	**2%***	**2%***	**3%***	12%	**1%***	**2%***	**3%***

*Chi-square test (pre-index vs post-index), alpha=0.05 level of significance

Table 2. Healthcare resource utilization (HCRU) and costs pre-index and 28-, 84-, 168- days post-index to main diagnosis

HCRU	Malnutrition N=231				Digestive System N=335				Cerebral Palsy N=145				Seizure N=111			
	Pre-index	Post-index			Pre-index	Post-index			Pre-index	Post-index			Pre-index	Post-index		
		28-days	84-days	168-days		28-days	84-days	168-days		28-days	84-days	168-days		28-days	84-days	168-days
Inpatient (% visits)	22%	**2%***	**4%***	**5%***	37%	**3%***	**7%***	**9%***	37%	**2%***	**4%***	**5%***	49%	**7%***	**10%***	**13%***
Emergency Department (% visits)	3%	1%	1%	1%	11%	**1%***	**1%***	**3%***	6%	**1%***	**1%***	**1%***	18%	**3%***	**4%***	**5%***
Other (% visits)	4%	**0%***	**1%***	**1%***	4%	**1%***	**1%***	2%	7%	**1%***	**1%***	**1%***	11%	**2%***	**2%***	**4%***
Outpatient (% visits)	100%	**58%***	**68%***	**73%***	100%	**59%***	**69%***	**75%***	100%	**66%***	**72%***	**79%***	100%	**59%***	**67%***	**76%***
Outpatient (mean visits)	11	**2†**	**3†**	**5†**	15	**2†**	**4†**	**7†**	17	**2†**	**5†**	**7†**	15	**2†**	**4†**	**6†**
Total Visits (mean)	20	**9†**	**10†**	**17†**	31	**9†**	**12†**	**16†**	27	**6†**	**11†**	**13†**	25	**6†**	**10†**	**14†**
Outpatient (mean costs, $)	$83,549	**$14,121†**	**$27,901†**	**$41,056†**	$121,557	**$19,648†**	**$37,532†**	**$56,927†**	$160,742	**$21,941†**	**$45,877†**	**$68,273†**	$113,580	**$15,581†**	**$30,599†**	**$45,045†**
Total (mean costs, $)	$127,839	**$49,117†**	**$59,211†**	**$105,291†**	$201,406	**$68,802†**	**$90,826†**	**$110,618†**	$220,334	**$39,807†**	**$74,031†**	**$98,029†**	$170,055	**$42,958†**	**$63,757†**	**$89,031†**

† t-Test; *Chi-square test (pre-index vs post-index), alpha=0.05 level of significance; Other places of service include assisted living, intermediate care, and facilities not identified on the submitted claim; Total include post-acute care visits associated with inpatient, emergency department, outpatient, urgent care and other places of service combined.

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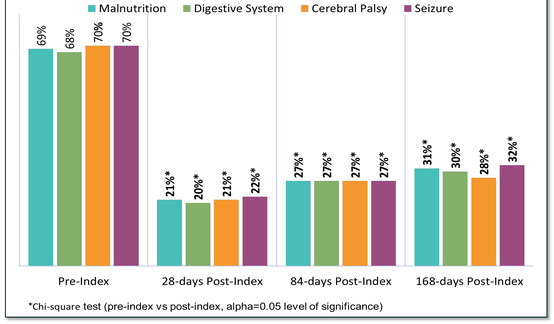
Figure 1: Pediatric patients experiencing GI intolerance symptoms, according to main diagnosis



*Chi-square test (pre-index vs post-index, alpha=0.05 level of significance)

RESULTS - GI INTOLERANCE

- Across these diagnoses, significantly fewer patients experienced GI intolerance symptoms as early as 28-days post-index while receiving the CBTF formula compared to pre-index (p<0.05), and this reduction was maintained at 84 and 168-days post-index **(Figure 1).**
- Significant reductions in constipation, nausea, vomiting, abdominal pain, diarrhea, flatulence, gagging & retching and abdominal distention were observed starting at 28-days post-index **(Table 1).**

CONCLUSIONS

- A CBTF formula prescribed for post-acute care children diagnosed with malnutrition, diseases of the digestive system, cerebral palsy or seizure disorders was well tolerated and associated with significant reductions in GI intolerance symptoms.
- Significant reductions in HCRU and associated costs were observed, demonstrating the potential role of CBTF in improving clinical and health economic outcomes in children with common chronic conditions receiving HEN.

REFERENCES

(1) Elfadil OM et al. JPEN 2021:1-9; (2) Mundi MS, et al. NCP. 2020;35(3):487-494; (3) Henrikson A et al. JPEN. 2022 Mar;46(S1): S162-S163; (4) Desai A et al. NASPGHAN Annual Meeting: October 13-15, 2022 (Orlando, FL).