

BACKGROUND

- Enteral nutrition (EN) is standard of care for patients unable to meet nutrition needs orally.¹
- Evidence supports improved gastrointestinal (GI) tolerance with peptide-based EN^{2,3} or EN containing fruit and vegetable ingredients.^{4,5}
- However, data are scarce regarding health economic impacts associated with EN formulas combining plant-based peptides with fruit and vegetable ingredients (PPFV).

OBJECTIVE

- To assess healthcare resource utilization (HCRU) and associated costs in children and adults receiving PPFV in post-acute care settings.

METHODS

- Retrospective study of de-identified, nationally representative US claims data from the Decision Resources Group Real World Evidence Data Repository from January 2020 – December 2022.
- Inclusion criteria: Enterally fed patients in post-acute care setting.
 - Two cohorts: Pediatric (1-13 years old) and Adult (≥14 years old),
 - Pediatric or adult PPFV as sole-source nutrition ≥ 5 days.
- Study definitions:
 - Index date: date of hospital discharge,
 - Pre-index: 6 months prior to index date,
 - Post-index: any record in the study period at 1, 3 and 6 months (28-, 84- and 168-days, respectively) after hospital discharge.
- HCRU compared at pre- and post-index periods for inpatient, outpatient, urgent care (UC), emergency department (ED), telemedicine, other places of service, and total visits.
- Multivariate cost outcomes at pre- and post-index periods were compared after adjusting for age, sex and comorbidity index scores.

RESULTS - PATIENT CHARACTERISTICS (TABLE 1)

- For children, overall mean (SD) Pediatric Comorbidity Index (PCI) score was 7.4 (3.5); most PCI weighted scores were ≥4, indicating a higher severity of comorbidity.
- For adults, overall mean (SD) Charlson Comorbidity Index (CCI) weighted score was 7.2 (4.6); majority of CCI weighted scores were ≥3, indicating a moderate severity of comorbidity.

HCRU AND ASSOCIATED COSTS

- Pediatric Patients:
 - Mean visits: Outpatient visits were reduced at all post-index periods and mean total visits up to 3 months post-index (p≤0.05, Table 2). Differences in mean visits for inpatient, ED and UC were not statistically significant.
 - Proportion of patients requiring inpatient visits was significantly reduced at all post-index periods (p≤0.05; Table 2).
 - Costs: HCRU reductions resulted in significant decrease of mean adjusted costs associated with inpatient and outpatient visits at all post-index periods; total mean adjusted costs were reduced up to 3 months post-index (p≤0.05; Figure 1). Other cost comparisons were not significantly different.
- Adult Patients:
 - Mean visits: Outpatient visits were significantly reduced at all post-index periods, and mean ED and other visits up to 3 months (p≤0.05, Table 2). Mean inpatient visits were reduced up to 1 month, while UC and telemedicine were not significantly different.
 - Proportion of patients requiring inpatient visits was significantly reduced at all post-index periods, and other visits up to 3 months (p≤0.05, Table 2). For ED visits, reductions were observed up to 1 month, with no differences for remaining visit types.
 - Costs: HCRU reductions resulted in a significant decrease of total mean adjusted costs and mean adjusted costs associated with outpatient, inpatient, ED, and UC visits at all post-index periods (p≤0.05). Compared to pre-index (\$676,456), the total mean adjusted costs significantly decreased to \$191,211, \$352,432 and \$427,576 at 1-, 3- and 6-months post-index, respectively (Figure 1).

Significant reductions in Healthcare Resource Utilization and Cost Savings were observed in children and adults receiving a plant-based peptide EN formula containing fruit and vegetable ingredients

Table 1. Patient Characteristics

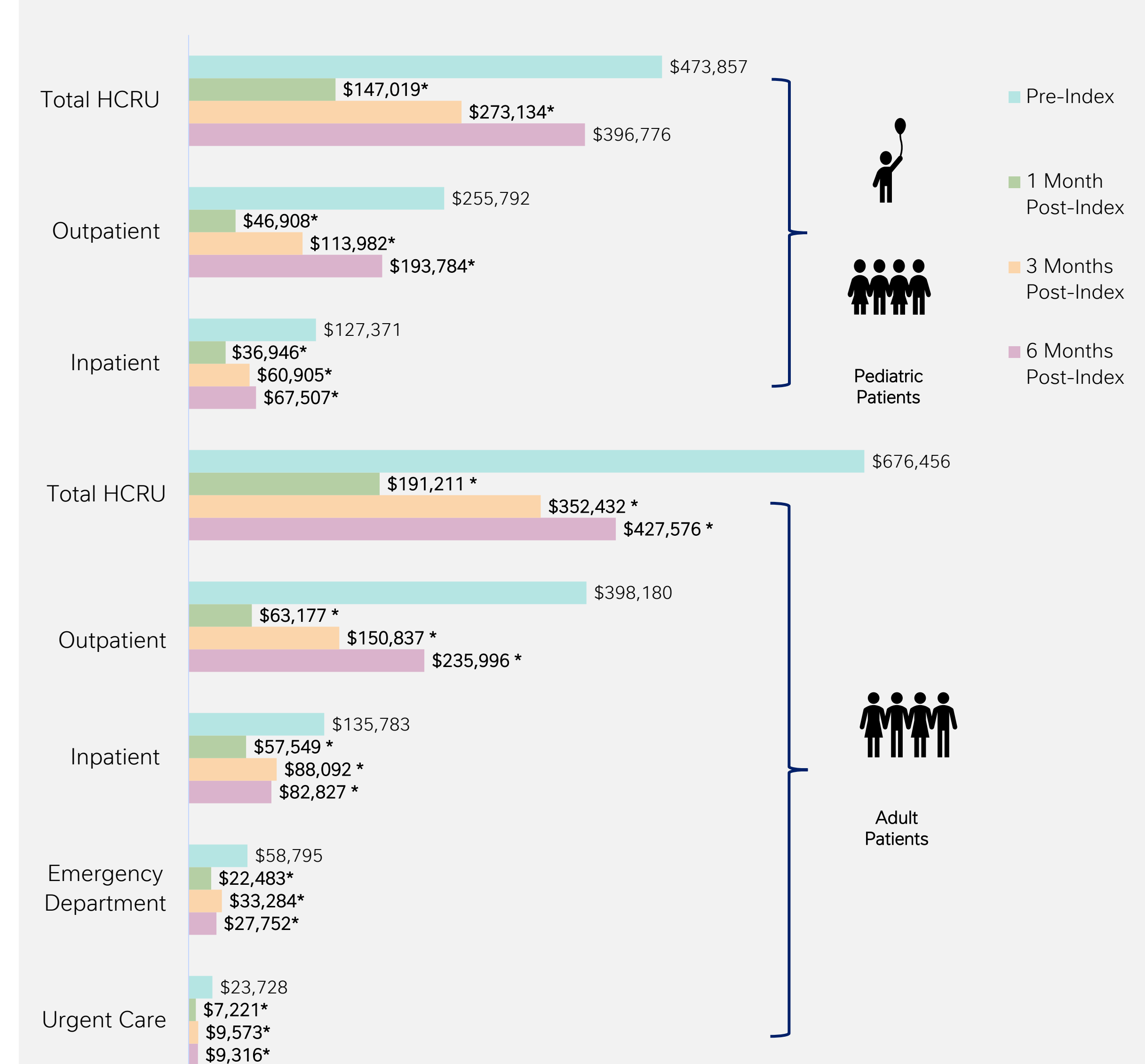
Pediatric Patients (N=91)	Mean (SD)	Adult Patients (N=82)	Mean (SD)
Age (years)	5.5 (3)	Age (years)	49 (20.5)
	N (%)		N (%)
Female	45 (49)	Female	46 (56)
Region		Region	
Midwest	34 (37)	Midwest	21 (26)
West	8 (9)	West	23 (28)
South	23 (25)	South	24 (29)
Northeast	26 (29)	Northeast	14 (17)
Comorbidities		Comorbidities	
Congenital Malformations	66 (73)	Cancer	32 (39)
Developmental Delays	55 (60)	Chronic pulmonary disease	24 (29)
GI conditions	52 (57)	Paraplegia and hemiplegia	20 (24)
Pediatric Comorbidity Index Weighted Score ≥4	76 (84)	Charlson Comorbidity Index Weighted Score ≥3	42 (56)

Table 2. HCRU among post-acute care patients receiving a plant-based peptide formula

	Pre-Index	Post-Index				p-value	OR
		1 Month	3 Months	6 Months			
Pediatric Patients (N=91)							
Total HCRU (mean)†	79	24	<0.001	49	0.004	70	0.430
Outpatient visits (mean)†	44	8	<0.001	19	<0.001	32	0.036
Inpatient visits (%)*	38%	13%	<0.001	18%	0.002	23%	0.025
Adult Patients (N=82)							
Total HCRU (mean)†	65	18	<0.001	32	0.007	41	0.108
Outpatient visits (mean)†	34	6	<0.001	14	<0.001	21	0.004
ED visits (mean)†	4	2	0.006	2	0.013	3	0.187
Other visits (mean)†	5	1	0.002	2	0.020	3	0.173
Inpatient visits (%)*	63%	27%	<0.001	40%	0.003	45%	0.019
Other visits (%)*	34%	9%	<0.001	20%	0.034	24%	0.170

† t-Test; * Chi-square test; alpha=0.05 level of significance. Significant association are **bolded**. Total includes data from inpatient, outpatient, emergency department, urgent care, telemedicine, other places of service. Visits with non-significant association are not presented here. Other places of service include assisted living, intermediate care, and facilities not identified on the submitted claim.

Figure 1: Costs Associated With Different Places of Service In Post-Acute Care Patients Receiving A Plant-Based Peptide Formula



* Multivariate costs adjusted for age, sex, and CCI score; pre- vs post-discharge; alpha=0.05 level of significance. Significant association are **bolded**. Visits with non-significant association are not presented here. Total includes data from inpatient, outpatient, emergency department, urgent care, telemedicine, other places of service.

CONCLUSIONS

- Use of a plant-based peptide EN formula containing fruit and vegetable ingredients was associated with significant reductions in various HCRU measures up to 6 months post hospital discharge in children and adults, with the most consistent reductions observed 1-month post index.
- These improvements in HCRU support the potential of PPFV as a cost savings option in children and adults requiring EN support in a post-acute care setting.