

# Comparative health resource utilization and cost analysis of Porcine Placental Extracellular Matrix versus standard of care and other advanced treatments in the treatment of venous leg ulcers in the Medicare Fee-For-Service population

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## INTRODUCTION

- Venous leg ulcers (VLU) are common complications of venous disease that have significant economic costs while also increasing likelihood of morbidity and mortality.
- VLU are chronic, occurring in over 168,000 Medicare Fee-For-Service (FFS) patients in 2024 (0.5% of FFS patients).
- A novel advanced skin substitute product, Porcine Placental Extracellular Matrix (PPECM), has had sufficient utilization amongst Medicare beneficiaries to conduct this analysis of downstream healthcare resource utilization after treatment.

### STUDY OBJECTIVE

To examine the comparative health resource utilization and cost of PPECM\* versus standard of care (SOC) and other advanced treatments (AT) in the management of VLU using real world data from the Medicare FFS population.

## METHODS

- Retrospective analysis of healthcare claims from 100% Medicare FFS Research Identifiable Files (2021 - 2024).
- Patients identified with VLU and L97.xx diagnosis code (non-pressure chronic ulcer of the lower limb) on the same day were categorized into groups according to treatment received: (1) PPECM\*, (2) standard of care (SOC)‡, (3) other advanced treatments (AT)†.
- Patient demographics and comorbidities were assessed for homogeneity at baseline and balanced via Inverse Probability of Treatment Weighting (IPTW), to create a homogenous cohort for balanced comparison of health outcomes.
- Downstream outcomes analysis included healthcare resource utilization per beneficiary costs, and Medicare reimbursement amounts by site of care (Medicare Part A and B).

\*PPECM: InnovaMatrix® AC, Convatec Triad Life Sciences, LLC, Memphis, TN, USA;  
 ‡SOC: Surgical debridement, total contact casting, compression, non-surgical selective debridement and dressing changes, general debridement, SOC-dressing;  
 †AT: Collagen dressings, platelet-rich plasma, negative pressure wound treatment, electrostimulation, MIST therapy, hyperbaric oxygen, topical oxygen

## RESULTS

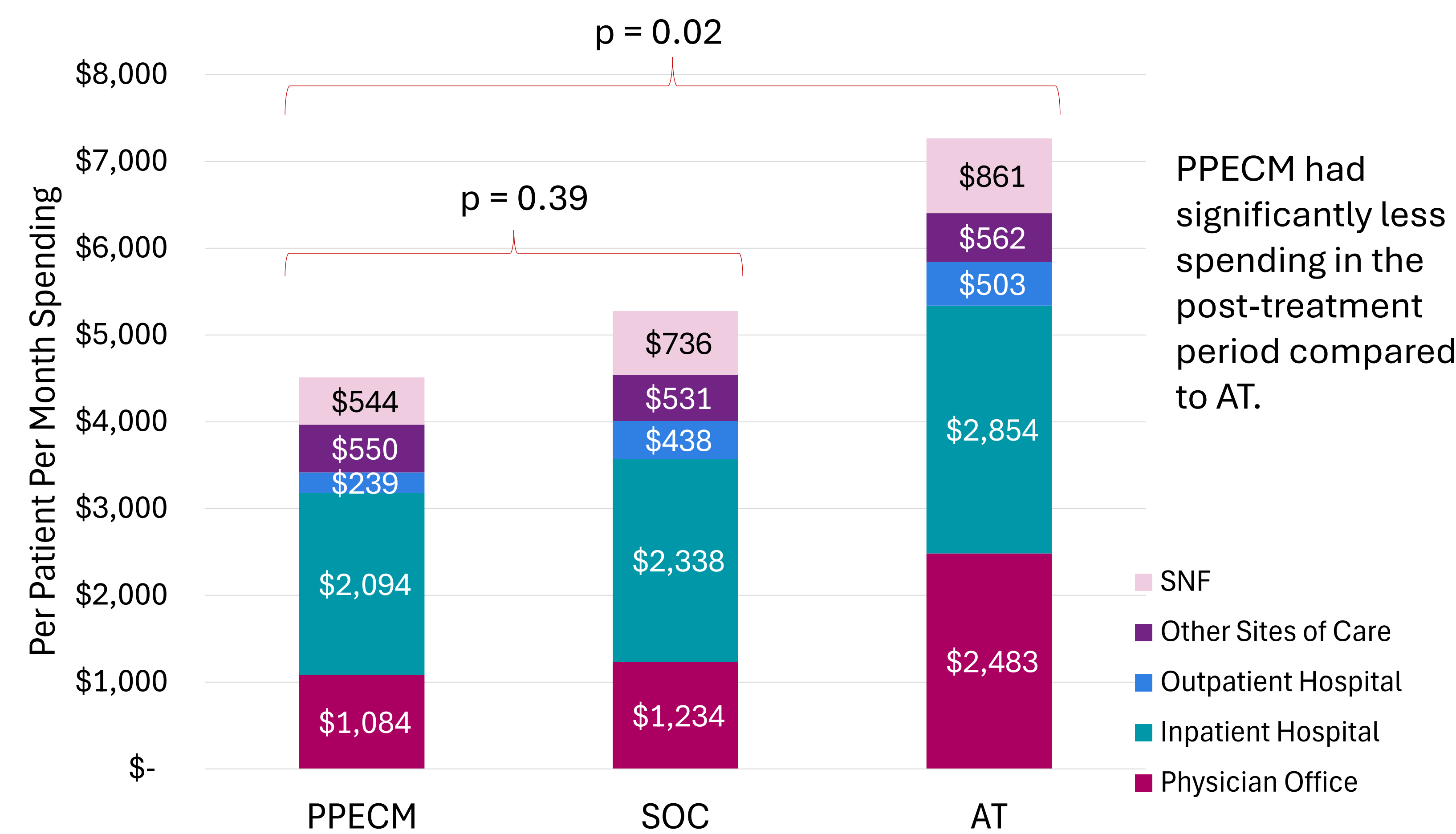
**Table 1: Episode Demographics – After Application of IPTW Balancing**

- IPTW used to control for differences found at age cohort (65-74), dual eligibility for Medicare/Medicaid, reason for Medicare entitlement (aged), wound depth, wound location, and chronic heart failure.

	VLU (N=56,498 treatment episodes selected for analysis)		
	PPECM (N=60)	SOC (N=53,947)	AT (N=2,491)
Mean Age	77.6	76.9	76.8
Male	52%	48%	44%
Wound Location (ankle)	9%	11%	11%
Wound Location (other part of lower leg)	44%	42%	42%
Wound Location (other, multiple)	47%	47%	47%
Wound Depth (with fat layer exposed)	39%	38%	38%
Wound Depth (unspecified)	21%	20%	20%
Wound Depth (other, multiple)	40%	42%	42%
Charlson Comorbidity Index – Mean CCI	3.4	3.4	3.5
Chronic Heart Failure	27%	37%	35%

\*Patients receiving a combination of at least two treatment groups were excluded from the analysis

**Figure 1. Per Patient Per Month Spending in 180-Day Post Period**



**Table 2. Weighted Regression Analysis on Utilization Rates and Per Beneficiary Spending By Site of Care; 6-Month Post-Period Post Treatment Episodes**

Site of Care	PPECM		SOC		AT	
	Point Estimate	95% CI	Point Estimate	95% CI	Point Estimate	95% CI
<b>Average Visit Counts Per Beneficiary</b>						
Physician Office Visits	18.43	[18.37-18.49]	18.24**	[18.19-18.30]	22.29**	[22.23-22.36]
Outpatient Hospital Visits	2.51	[2.49-2.53]	4.79**	[4.76-4.82]	4.90**	[4.87-4.93]
Inpatient Hospital Visits	0.32	[0.31-0.32]	0.42**	[0.42-0.43]	0.45**	[0.44-0.46]
Inpatient Hospital - Medical DRGs	0.38	[0.37-0.39]	0.42**	[0.41-0.43]	0.45**	[0.44-0.45]
Inpatient Hospital - Surgical DRGs	0.09	[0.09-0.10]	0.12**	[0.12-0.13]	0.16**	[0.16-0.17]
SNF Visits	0.38	[0.37-0.39]	0.41**	[0.40-0.42]	0.47**	[0.46-0.48]
<b>Per Beneficiary Spending</b>						
Physician Office Cost	\$1,114	[\$1091-\$1137]	\$1,310**	[\$1284-\$1337]	\$2,702**	[\$2647-\$2757]
Outpatient Hospital Cost	\$495	[\$482-\$508]	\$547**	[\$536-\$557]	\$667**	[\$654-\$680]
Inpatient Hospital Cost	\$9,448	[\$9179-\$9725]	\$7,726**	[\$7546-\$7910]	\$8,889**	[\$8688-\$9095]
Inpatient Cost – Medical DRGs	\$7,611	[\$7391-\$7838]	\$6,173**	[\$6027-\$6323]	\$6,942**	[\$6779-\$7110]
Inpatient Cost – Surgical DRGs	\$9,374	[\$8907-\$9866]	\$9,204	[\$8800-\$9626]	\$9,136	[\$8800-\$9486]
SNF Cost	\$4,202	[\$4089-\$4318]	\$4,657**	[\$4550-\$4768]	\$5,243**	[\$5124-\$5365]
Total Medical Cost	\$4,818	[\$4724-\$4915]	\$5,786**	[\$5676-\$5898]	\$8,090**	[\$7935-\$8249]

\*\*Significantly different from PPECM (p<0.05), DRG: Diagnosis-related groups

## DISCUSSION

- Weighted regression analysis demonstrates significant downstream health care utilization and cost savings for beneficiaries treated with PPECM over SOC (\$968 per patient per month) and AT (\$3,272).
- Greatest per PPECM patient savings were identified in the physician office, outpatient hospital, and skilled nursing facility (SNF).
- Although the rate of physician office utilization was higher for PPECM compared to SOC, the spending for PPECM was lower, and all other sites of care had lower utilization for PPECM treated patients compared to SOC and AT.
- Rates of wound complications showed no significant differences, but amputations were substantially lower in PPECM than other AT (2% vs 7%; p=0.08).
- Despite the IPTW, discreet differences in wound characteristics of the comparison groups may cause bias in results. Wounds treated with PPECM and AT may have been more severe and struggle to heal.
- While PPECM is relatively new, this analysis demonstrates the lower cost and resource use of this novel treatment.

### CONCLUSION

These findings suggest that PPECM\* had significantly less post-treatment downstream total medical spending and utilization across the majority of care sites compared to SOC and AT.