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ABSTRACT

Comparative health resource utilization and cost analysis of porcine placental extracellular matrix versus standard of care and other advanced treatments in the treatment of diabetic foot ulcers in the Medicare Fee-For-Service population

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Aim: Diabetic foot ulcers (DFU) carry substantial economic and health burdens. This study compares health resource use and cost in the Medicare population receiving porcine placental extracellular matrix (PPECM)* to patients receiving standard of care (SOC)‡ and other advanced treatments (AT)†.

Methods: Medicare Research Identifiable Files containing 100% of Medicare Fee-For-Service claims for Parts A and B were assessed from 2021 through 2024. Patients with a newly diagnosed DFU were identified, and their treatment episodes were classified into three exclusive categories: PPECM, SOC, or AT. Inverse probability of treatment weighting was applied to account for baseline clinical and demographic differences. Post-treatment adjusted cohorts were then analyzed using weighted regression models to estimate differences in predicted spending and utilization across treatment groups and care settings.

Results: 225 DFU PPECM treatment episodes were selected to compare to the other groups (SOC = 111,707; AT = 5,701). Total medical spending in the post-treatment period did not show significant differences between groups. However, PPECM had a significantly lower rate of skilled nursing facility (SNF) spending than both SOC and AT, with no significant spending differences seen in other sites of care (*Table 1*). Weighted regression analyses further showed that PPECM patients had significantly lower utilization in inpatient hospitals compared to AT-only, and reduced utilization across physician offices, outpatient hospitals, outpatient emergency rooms, and SNFs compared to both SOC and AT (*Table 2*).

Conclusions: Patients with DFU treated with PPECM demonstrated lower or comparable downstream healthcare utilization relative to those treated with SOC and alternative ATs. While costs were similar between groups, differences in utilization patterns suggest that PPECM may reduce the need for repeat or subsequent medical interventions.

*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

Conflicts of Interest: JL: employee of Convatec; JM: employee of Convatec; RD: employee of Convatec; SN: employee of Convatec; IV: none to declare; CS: none to declare; PK: none to declare; CT: employee of Convatec.

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TABLE 1 | Comparison of post-period costs between treatment cohorts

	PPECM	Standard of care (SOC)		Other advanced treatments (AT)	
Site of care	Average spend (per patient per month)	Average spend (per patient per month)	P-value	Average spend (per patient per month)	P-value
Physician office cost	$1,690	$1,092	0.23	$1,319	0.46
Inpatient hospital cost	$3,215	$2,610	0.27	$3,001	0.70
Inpatient hospital cost - medical	$1,504	$1,633	0.56	$1,807	0.19
Inpatient hospital cost - surgical	$1,712	$977	0.12	$1,189	0.27
Outpatient hospital cost	$878	$623	0.13	$669	0.21
DME cost	$204	$128	0.07	$200	0.93
Home health cost	$398	$343	0.19	$391	0.86
SNF cost	$268	$703	<0.0001	$808	<0.0001
Total medical cost	$6,982	$5,660	0.19	$6,538	0.62

PPECM, porcine placental extracellular matrix; DME, durable medical equipment; SNF, skilled nursing facility

TABLE 2 | Weighted regression comparison of post-period utilization rates between treatment cohorts

	PPECM			Standard of care (SOC)				Other advanced treatments (AT)			
Site of care	Point	LCL	UCL	Point	LCL	UCL	P-value	Point	LCL	UCL	P-value
Physician office visits	18.36	18.32	18.40	18.76	18.72	18.80	<.0001	22.05	22.01	22.09	<.0001
Outpatient hospital visits	3.84	3.82	3.86	4.95	4.93	4.97	<.0001	5.29	5.27	5.31	<.0001
Inpatient hospital visits	0.44	0.44	0.45	0.43	0.43	0.44	0.05	0.45	0.44	0.46	0.04
Readmissions (within 30 days)	0.15	0.14	0.15	0.15	0.15	0.16	0.02	0.19	0.18	0.19	<.0001
ICU visits	0.19	0.18	0.19	0.20	0.20	0.20	<.0001	0.21	0.21	0.22	<.0001
Inpatient hospital - medical DRGs	0.39	0.38	0.40	0.42	0.41	0.42	<.0001	0.41	0.40	0.42	<.0001

TABLE 2 | Continued. Weighted regression comparison of post-period utilization rates between treatment cohorts

	PPECM			Standard of care (SOC)				Other advanced treatments (AT)			
Site of care	Point	LCL	UCL	Point	LCL	UCL	P-value	Point	LCL	UCL	P-value
Inpatient hospital - surgical DRGs	0.22	0.22	0.23	0.17	0.17	0.17	<.0001	0.19	0.19	0.20	<.0001
Home health visits	1.06	1.05	1.07	0.85	0.84	0.85	<.0001	0.97	0.96	0.98	<.0001
ER visits	0.48	0.48	0.49	0.44	0.43	0.45	<.0001	0.44	0.43	0.44	<.0001
Inpatient ER visits	0.42	0.41	0.43	0.42	0.42	0.43	0.42	0.41	0.40	0.42	0.02
Outpatient ER visits	0.35	0.35	0.36	0.45	0.44	0.46	<.0001	0.46	0.45	0.46	<.0001
DME visits	2.80	2.79	2.82	2.81	2.79	2.82	0.40	3.11	3.09	3.13	<.0001
SNF visits	0.18	0.18	0.19	0.37	0.36	0.37	<.0001	0.40	0.39	0.40	<.0001

PPECM, porcine placental extracellular matrix; LCL, lower confidence limit; UCL, upper confidence limit; DRG, diagnosis related groups; ICU, intensive care unit; ER, emergency room; DME, durable medical equipment; SNF, skilled nursing facility