

Decreased Healthcare Resource Utilization With Lidocaine Topical System 1.8% Compared to Lidocaine 5% Patch: A Retrospective Claims Analysis

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Background

- Lidocaine topical system 1.8% (LTS [ZTLido]) and lidocaine 5% patch (LP [Lidoderm]) are bioequivalent prescription lidocaine topical patches that are identical in size and deliver the same amount of lidocaine through the skin, but lidocaine bioavailability from LTS is more than 10X that of LP¹
- The novel composition and design of LTS has demonstrated significantly better adhesion performance than branded and generic LP in comparative clinical studies²:
 - 89% adhesion for LTS
 - 63% for branded LP and 27% for generic LP
- Poor adhesion impedes medication delivery and pain relief for patients. As a result, lidocaine patches that adhere poorly or detach may result in suboptimal pain management and potentially increased healthcare resource utilization.
- LTS and LP are approved for the relief of pain associated with post-herpetic neuralgia, however there is significant utilization in patients with lower back pain (LBP)^{3,4}
- Chronic LBP, which comprises nociceptive and neuropathic pain, is often treated with topical lidocaine for the neuropathic component as a combination therapy along with other agents, such as gabapentinoids and SNRIs

Purpose

- Use claims data to evaluate the impact of LTS versus conventional LP on healthcare resource utilization, including office, outpatient and emergency room (ER)/urgent care visits; and pain procedures

Methods

Table 1. Cohort Definition and Analytical Design

Data Source	Optum's de-identified Normative Health Informatics database, consisting of commercial and Medicare Advantage-covered lives
Study Time Period	April 1, 2018 – March 31, 2023
Index Event	First prescription fill for LTS or LP
Eligibility Criteria	6 months of pre- and post-index continuous medical and pharmacy eligibility
Inclusion Criteria	<ul style="list-style-type: none"> Diagnosis in the pre-index period for LBP in all 25 header diagnoses for respective disease cohort Patient must be at least 18 years of age at index
Exclusion Criteria	No claim of either index therapy in the pre-index time
Cohorts	1) LTS 2) LP

- Change in pre- vs post-index healthcare utilization was compared for the LTS and LP cohorts in 3 settings (Table 2)

Table 2. Settings for Comparison of Healthcare Utilization in the LPS and LT Cohorts

Outpatient	Office	ER/Urgent Care
Outpatient to a hospital-based clinic	Office	Urgent care facility
Off-campus hospital affiliated clinic	Federally qualified health center	Emergency room
Ambulatory surgical center	Rural health clinic	

- The change in pre- vs post-index average number was also compared for the following pain procedures relevant to LBP (Table 3)

Table 3. Low Back Pain Procedures for Pre- vs Post-Index Comparison in LTS and LP Cohorts

Ablation	Injection/Infusion	Neurostimulator
Acupuncture	Neurolysis	Physical therapy
Biofeedback	Neuroplasty	TENS unit

- Healthcare utilization included office visits (all-cause), outpatient clinic visits, ER/Urgent Care visits, and pain procedures
- Comparisons of count data in pre- and post-index settings were made with the Wilcoxon signed-rank test
- A random coefficient model with a Poisson distribution was used to determine if there was a statistical difference in change from pre- to post-index count between the LTS and LP cohorts

Results

Table 4. Patient Waterfall and Cohort Size

Patients	LTS	LP
With drug(s) of interest with first fill ^a in the pharmacy claims-index event	12,612	185,761
Aged ≥18 years at index event	12,606	185,460
With no index therapy within 6 months before index event	7203	100,088
With 6 months of continuous pre- and post-index medical + pharmacy coverage	3093	46,492
With diagnosis of LBP in the pre-index period	1847	17,640

^aOctober 01, 2018 - September 30, 2022

Table 5. Demographics of the LBP Cohort

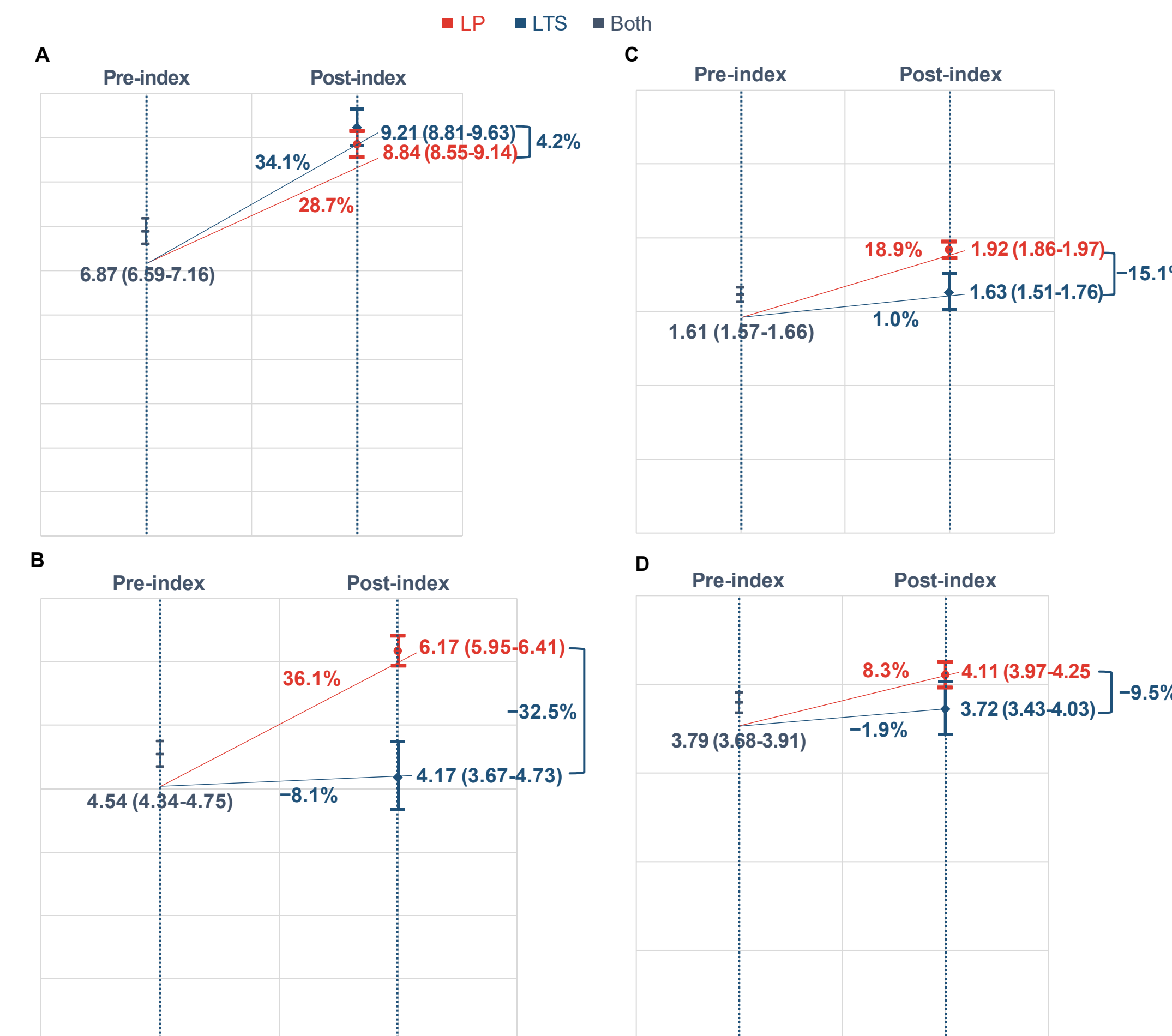
	LTS (n=1847)	LP (n=17,640)
Age, years, mean (SD)	64.7 (12.2)	67.0 (13.8)
Age, n (%)		
18-44	107 (6)	1,206 (7)
45-64	782 (42)	5,805 (33)
65-74	536 (29)	4,906 (28)
75-84	329 (18)	3,947 (22)
85+	93 (5)	1,776 (10)
Sex, n (%)		
Female	1359 (74)	12,485 (71)
Male	488 (26)	5155 (29)
Insurance, n (%)		
Medicare Advantage	1427 (77)	12,575 (71)
Commercial	420 (23)	5065 (29)

Table 6. LBP All-cause Visits During Pre- and Post-Index Time Periods

All-cause Visits	Pre-index (6 months)		Post-index (6 months)		Pre-index Median (IQR)	Post-index Median (IQR)	Wilcoxon Rank Sum Test P-value	Poisson Random Coefficient Model	
	n (%)	Average	n (%)	Average				Random coefficient (%)	P-value
Office									
LP	17,131 (97.1)	11.7	16,966 (96.2)	12.0	9 (5-15)	9 (5-16)	0.3735	Ref.	Ref.
LTS	1841 (99.7)	13.7	1829 (99.0)	13.2	12 (8-17)	11 (7-17)	<0.001	4.2	0.014
Outpatient									
LP	13,395 (75.9)	8.6	13,421 (76.1)	9.8	3 (1-8)	3 (1-9)	<0.001	Ref.	Ref.
LTS	1273 (68.9)	6.1	1271 (68.8)	6.2	2 (1-5)	2 (1-5)	0.1511	-32.5	<0.001
ER-Urgent care									
LP	8163 (46.3)	2.9	7649 (43.4)	2.8	1 (1-3)	1 (0-2)	<0.001	Ref.	Ref.
LTS	726 (39.0)	2.2	721 (39.0)	2.3	1 (0-2)	1 (0-2)	0.8632	-15.1	<0.001
Pain Procedures									
LP	10,472 (59.4)	6.9	10,490 (59.5)	7.5	2 (1-5)	2 (1-5)	<0.001	Ref.	Ref.
LTS	1227 (66.4)	7.0	1197 (64.8)	6.7	2 (1-5)	2 (1-4)	0.0035	-9.5	0.027

- For LTS relative to LP, after adjusting for pre-index visits, there was a 32.5% reduction in outpatient visits (p<0.001), a 15.1% reduction in ER/Urgent Care visits (p<0.001), a 4.2% increase in office visits (p=0.014), and a 9.5% decrease in pain procedures (p=0.027) (Figure 1)

Figure 1. Random Coefficient Model Results of LBP All-Cause Visits: Office (A), Outpatient (B), ER/Urgent care (C), and Pain Procedures (D)



Conclusions

There was a decrease in all HCRU, except office visits, for LTS relative to LP after adjusting for pre-index visits. There was a slight increase in office visits with LTS vs with LP.

- Due to managed care restrictions for branded products, the LTS group may have included patients with more severe LBP who had more pre-scheduled office visits that occurred after index treatment
- A more significant association was seen in a decreased number of outpatient and ER/urgent care visits with LTS vs with LP, which may indicate an immediate effect of improved LBP symptom management with LTS.

These model results imply that if a patient population with 100 outpatient visits 6 months after the start of LP therapy were instead on LTS, they would have:

- 32.5 fewer outpatient visits. Assuming an average cost of \$112.84/outpatient visit,⁵ this would equate to \$3,667 in savings.
- 15.1 fewer ER/Urgent care visits if they were instead on LTS therapy. Assuming an average cost of \$289/ER visit,⁵ this would equate to \$4,357 in savings.
- 9.5 fewer pain procedures. Assuming an average cost of \$89.16/pain procedure,⁶ this would equate to \$847 in savings.

LTS may be associated with decreased healthcare resource utilization compared with LP in LBP patients.