

Clinical and Health Economic Outcomes With and Without Liposomal Bupivacaine in Medicare-Insured Patients Undergoing Outpatient Shoulder Arthroplasty

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OBJECTIVE

To evaluate the impact of liposomal bupivacaine (LB) on healthcare utilization and opioid use for up to 12 months following total shoulder arthroplasty (TSA)

CONCLUSIONS

- 1 Medicare-insured patients receiving LB for outpatient TSA had lower all-cause total healthcare costs over 1 year of follow-up and experienced lower opioid use 1 week following surgery compared with patients not receiving LB (non-LB), which may have been driven by more effective perioperative pain management
- 2 These findings support reduced cost and improved quality metrics in patients treated with LB versus non-LB analgesia for outpatient shoulder surgery



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REFERENCES: 1. Wagner et al. *J Shoulder Elbow Surg.* 2020;28(12):2601-2609. 2. Steirhaus et al. *J Orthop.* 2018;15(2):581-585. 3. Fisher et al. *J Am Acad Orthop Surg.* 2026;33(1):el-elo. 4. Menendez et al. *J Shoulder Elbow Surg.* 2018;27(12):2113-2119. 5. Krupp et al. *Arch Orthop Trauma Surg.* 2023;143(4):1895-1902. 6. Lee et al. *JSES Int.* 2024;8(2):282-286. 7. EXPAREL (bupivacaine liposome injectable suspension) [US package insert]. Pacira BioSciences, Inc.; 2023. 8. Lee et al. *J ISAKOS.* 2024;9(1):9-15. 9. Jindia et al. *Surgeries.* 2022;3(1):64-70. 10. Pacira BioSciences, Inc. The NOPAIN Act. <https://www.nopainpact.com>. Accessed September 4, 2025.

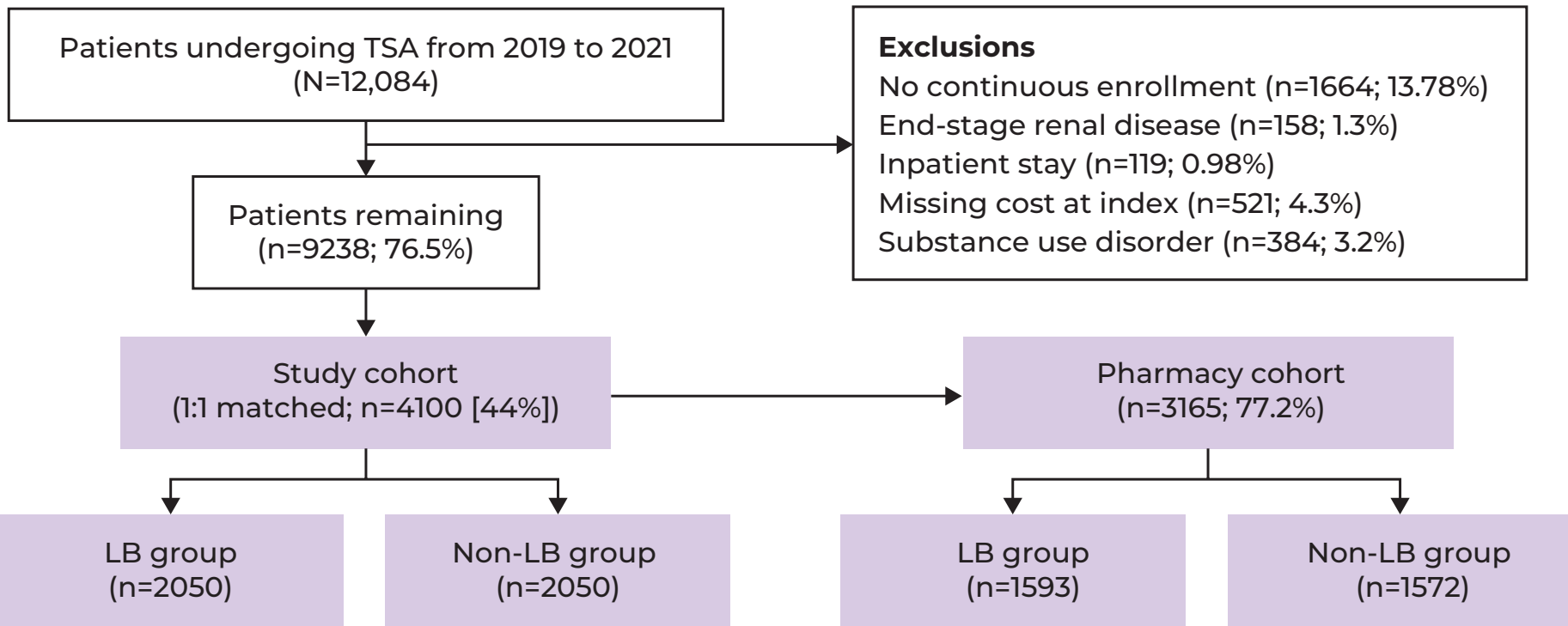
INTRODUCTION

- TSA (anatomic and reverse) procedures have been increasingly performed in the United States in recent years, with >100,000 procedures estimated to be performed in 2025¹
- Performing TSA procedures in outpatient care settings is associated with reduced healthcare costs compared with performing these procedures in inpatient settings²
- Effective perioperative pain management is critical to enable shorter length of stay after TSA and avoid severe pain, which can lead to downstream healthcare resource utilization and costs^{3,4}
 - A continuous indwelling catheter is one method for prolonged pain control after outpatient TSA, but it can have a high equipment cost and is associated with complications^{5,6}
- LB is a nonopioid treatment that has been found to be associated with reduced opioid consumption in patients undergoing TSA procedures⁷⁻⁹
- The NOPAIN Act has expanded reimbursement for qualifying nonopioid therapies, such as LB, when used for Medicare-insured patients undergoing outpatient procedures¹⁰
 - However, data regarding LB use for outpatient TSA in Medicare-insured patients are limited

RESULTS

- Overall, 4100 patients were included in the analysis (LB, n=2050; non-LB, n=2050) (Figure 1)

Figure 1. Sample population for retrospective analysis.



LB, liposomal bupivacaine; TSA, total shoulder arthroplasty.

- After propensity score matching, patient characteristics were similar between groups (Table 1)
 - The median age was ~74 years; most patients were female, White, and had a diagnosis of osteoarthritis
 - ~16% of patients had prior opioid exposure; ~25% to 30% of patients had chronic pain or were obese, and ~15% to 17% of patients had anxiety, depression, or had smoked

Table 1. Baseline Demographic and Clinical Characteristics

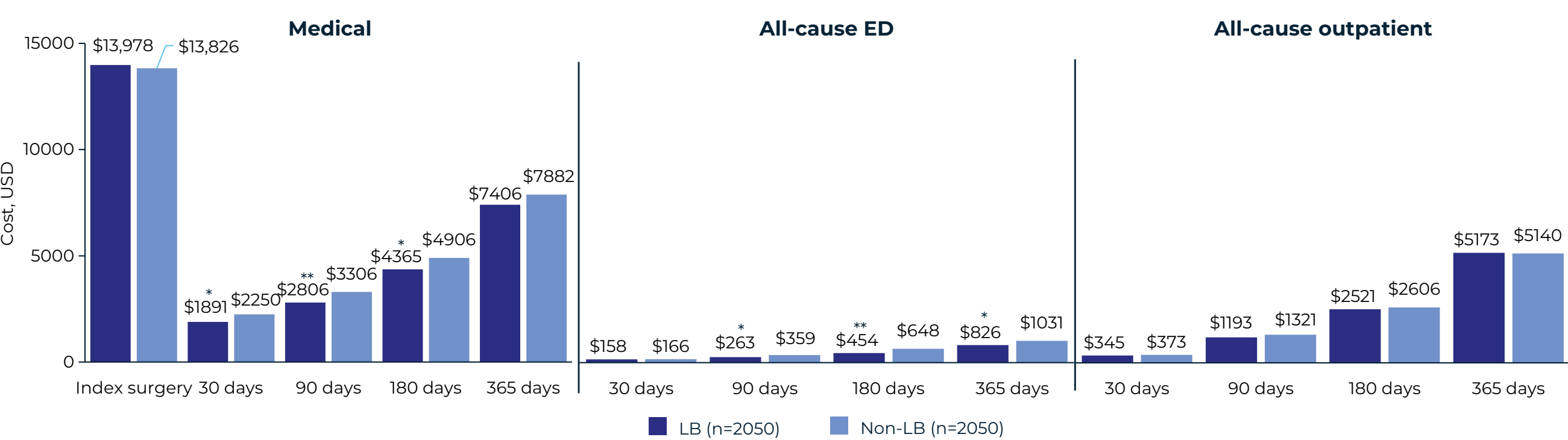
	PS-matched LB (n=2050) ^a	PS-matched non-LB (n=2050) ^a	PS-matched standardized mean difference, %
Age, mean (SD), y	74.5 (6.1)	74.3 (6.1)	3.5
Sex			
Female	1152 (56.2)	1118 (54.5)	-3.3
Male	898 (43.8)	932 (45.5)	3.3
Race			
White	1892 (92.3)	1917 (93.5)	-4.8
Non-White	158 (7.7)	133 (6.5)	4.8
Charlson Comorbidity Score, mean (SD)	0.6 (1.0)	0.6 (1.1)	1.8
Anxiety	334 (16.3)	343 (16.7)	-1.2
Chronic pain	625 (30.5)	638 (31.1)	-1.4
Depression	321 (15.7)	307 (15.0)	-1.9
Osteoarthritis	1926 (93.9)	1943 (94.8)	-3.6
Smoking	343 (16.7)	327 (15.9)	-2.1
Cancer	316 (15.4)	282 (13.8)	-4.7
Obesity	560 (27.3)	553 (27.0)	-0.8
Prior opioid exposure ^b	348 (17.0)	333 (16.2)	-2.0
Procedure year			
2019	36 (1.8)	32 (1.6)	1.5
2020	44 (2.2)	48 (2.3)	-1.3
2021	1970 (96.1)	1970 (96.1)	0.0
Region			
Northeast	214 (10.4)	228 (11.1)	-3.0
Midwest	530 (25.9)	557 (27.2)	2.2
South	935 (45.6)	777 (37.9)	15.7
West	371 (18.1)	488 (23.8)	-14.1

LB, liposomal bupivacaine; PS, propensity score; SD, standard deviation. ^aVariables are reported as n (%) unless otherwise labeled. ^bPharmacy cohort (Part D).

METHODS

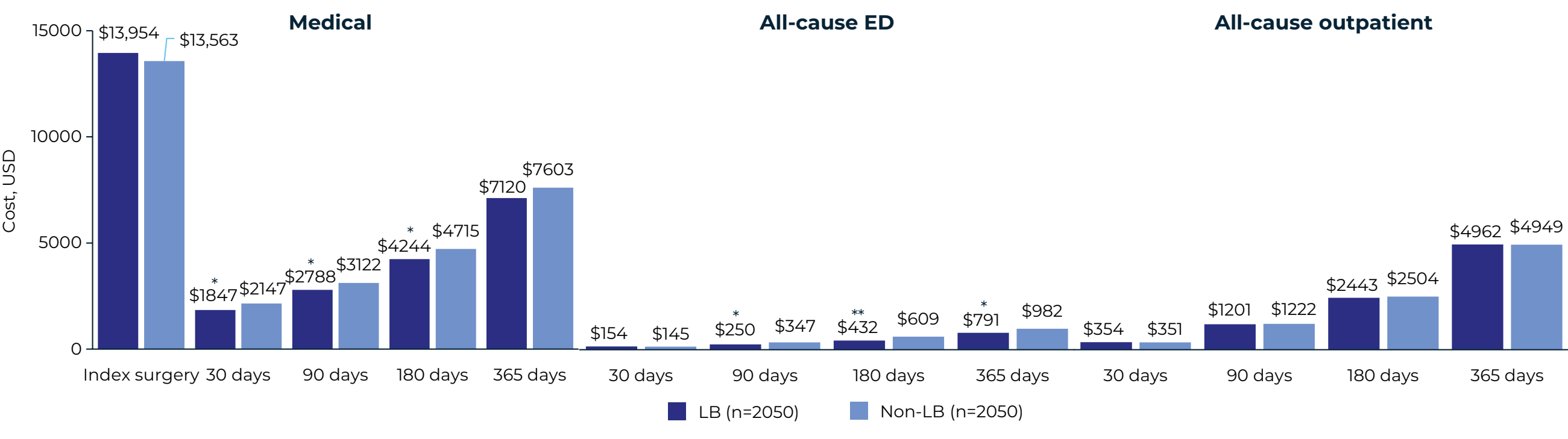
- Adults undergoing a TSA procedure between January 2019 and December 2021 in a hospital outpatient department with continuous enrollment at least 6 months before surgery and 12 months after surgery were retrospectively identified from the Centers for Medicare & Medicaid Services (CMS) database
 - Data for this study were extracted from the 20% Research Identifiable File Medicare Fee for Service (FFS) claims data (Parts A, B, D) and beneficiary enrollment/summary files under CMS Data Use Agreement (DUA) 70419
- The study cohort (Figure 1) was composed of patients who were divided into 2 groups on the basis of LB use during or after the TSA procedure ; groups were generated with 1:1 propensity score matching between the LB and non-LB groups
- Opioid-related outcomes were assessed over 12 months of follow-up after the surgery visit in the pharmacy cohort and included opioid use in oral morphine milligram equivalents (MMEs) and prescription status (yes/no)
- Total medical cost of care was assessed in the study cohort on the basis of costs from outpatient, inpatient, emergency department (ED), and skilled nursing facility (SNF) visits
- Generalized linear regression modeling was performed with appropriate distributions, including gamma distribution for healthcare costs, Tweedie distribution for opioid intake (MMEs), and binomial distribution for opioid filled status
- Subgroup analysis of outcomes was performed according to opioid exposure at baseline

Figure 2. Medical, all-cause ED, and all-cause outpatient cost comparisons between the LB and non-LB groups.



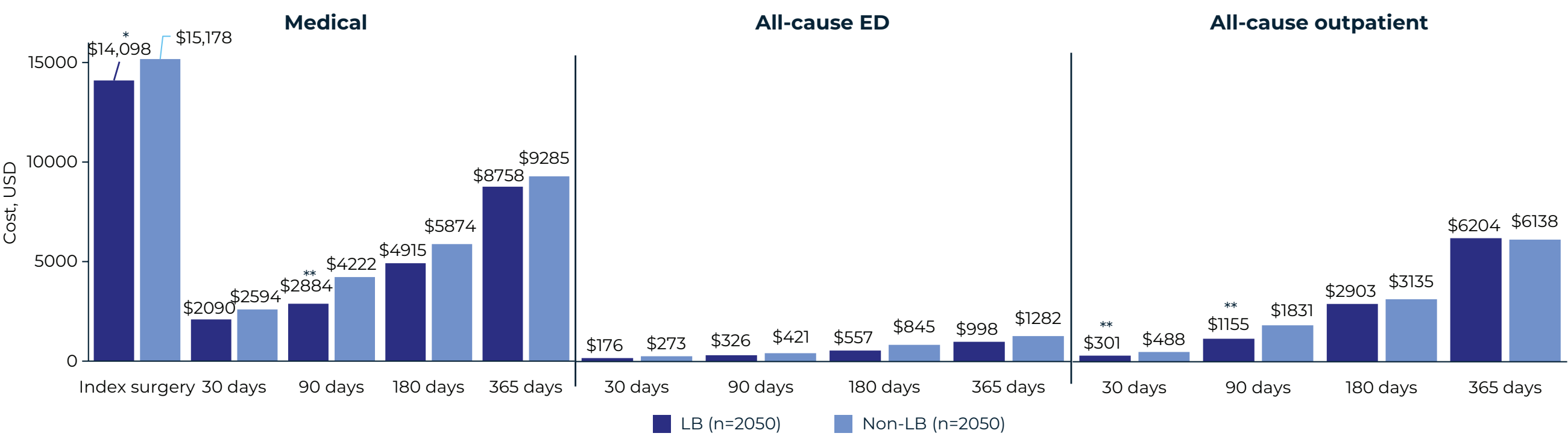
ED, emergency department; LB, liposomal bupivacaine. *P<0.05. **P<0.01.

Figure 3. Medical, all-cause ED, and all-cause outpatient cost comparisons between the LB and non-LB groups for opioid-naïve patients.



ED, emergency department; LB, liposomal bupivacaine. *P<0.05. **P<0.01.

Figure 4. Medical, all-cause ED, and all-cause outpatient cost comparisons between the LB and non-LB groups for opioid-experienced patients.



ED, emergency department; LB, liposomal bupivacaine. *P<0.05. **P<0.01.