



Research Update

California Workers' Compensation Inpatient Hospitalization Trends

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Executive Summary

Inpatient services provide vital medical care to injured workers. This analysis expands on prior research into California workers' compensation inpatient hospitalization trends, using hospital discharge data from 2008 and 2016 to compare the volume and distribution of inpatient services in workers' compensation to those covered by Medicare, Medi-Cal and group health plans. In addition to identifying the most common inpatient services provided to injured workers in the state, the study quantifies the recent reduction in the volume of discharges for spinal fusion surgery and lower extremity joint replacement, and identifies the top 10 hospitals with the highest proportion of workers' compensation patients in their payer mix. Among the key findings:

- Between 2008 and 2016, the number of inpatient hospitalizations in California decreased 31.2 percent in workers' compensation and 19.6 percent in group health, but increased 2.4 percent in Medicare and 19.6 percent in Medi-Cal. Statewide, the number of inpatient stays fell 1.1 percent across all payers.
- Hospital admissions for surgery accounted for 72.5 percent of workers' compensation inpatient stays compared to 39.3 percent for private coverage payers, 27.4 percent for Medicare, and 23.7 percent for Medi-Cal.
- The top workers' compensation inpatient service in 2016 was for major joint replacement or reattachment of lower extremity (knee or hip replacement).
- Of the top 10 Medicare severity-adjusted inpatient diagnosis-related group codes (MS-DRGs) used to describe workers' compensation inpatient discharges, six were for back and neck issues and four were for spinal fusions.
- Diseases and disorders of the musculoskeletal system and connective tissue accounted for 64.0 percent to 67.8 percent of all workers' compensation hospitalizations during the study period (2008 – 2016).
- Inpatient hospitalizations for spinal fusion surgery continue to decline in workers' compensation, dropping 9.4 percent from 2015 to 2016, for a total decline of 35.7 percent between 2008 and 2016.
- Although workers' compensation accounted for only 0.5 percent of all 2016 inpatient stays in California, for a small subset of hospitals injured workers accounted for a significantly higher share of the hospital's inpatient stays.
- Surgery admissions account for the majority (between 86.2 percent and 100 percent) of all workers' compensation inpatient hospitalizations for a subset of hospitals designated by Medicare as Long-Term Care Hospitals.

Background

Inpatient hospitalizations represent a small but vital portion of medical services in California workers' compensation and injured workers account for an extremely small share of total annual hospitalizations in California. Over the past 16 years, CWCI has issued a number of reports that have analyzed inpatient hospital utilization in the California workers' compensation system compared to government programs (Medicare and Medi-Cal) and private coverage. Workers' compensation has consistently represented less than 1 percent of California hospital discharges,^{1,2,3} and that proportion has declined from 0.7 percent in 2008 to 0.5 percent in the most recent three years (Exhibit 1).

The comparative analyses have utilized discharge data obtained from the California Office of Statewide Health and Development (OSHPD),⁴ which includes the number of inpatient discharges associated with Diagnosis Related Groups (DRGs) for California hospitals.

DRGs were first developed in the 1970s at the Yale University School of Organization and Management, which had been contracted by the Centers for Medicare and Medicaid Services (CMS, formerly the Health Care Financing Administration)⁵ to devise a system for classifying patients treated in acute inpatient hospital settings in order to establish equitable payment rates based on patient clinical similarity and resource intensity. Each MS-DRG is "defined by a particular set of patient attributes, which include principal diagnosis, specific secondary diagnosis, procedures, sex and discharge status."⁶

The cornerstone for DRG formulation is the principal diagnosis that occasioned the inpatient admission (*i.e.*, the clinical reason for the hospitalization). To achieve clinical coherence, physician panels grouped the principal diagnosis codes into 25 Medical Diagnostic Categories (MDCs) corresponding to major organ systems (*e.g.*, Respiratory System, Circulatory System, and Musculoskeletal System). Additional categorization was based on whether or not a patient had surgery during his or her inpatient stay and whether or not the surgical procedure typically requires an operating room – if the surgery requires an operating room, the patient is categorized as a *surgical* patient. All other patients are categorized as *medical*.

In addition to patient gender and discharge status, the DRG classification schema also includes the presence or absence of complications or comorbidities. The severity level is determined based on the absence or presence of a secondary diagnosis describing complications or comorbidities (CC) or major complications or comorbidities (MCC) that would affect the consumption of hospital resources. Significant revisions to DRG subdivisions based on the presence or absence of comorbid or complicating conditions or pediatric age (0-17) in *Version 25 DRGs* resulted in the name change to *Medicare Severity DRGs (MS-DRGs)*, effective October 2007.

The clinical and resource coherence embedded in the MS-DRG schema enables comparative hospital utilization analyses across patient populations, including Medicare, Medi-Cal, group health, and workers' compensation patients, all of which are covered in this analysis.

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1. Ireland, J. and Swedlow, A. Post-Reform Changes in Inpatient Hospital Use and Back Surgery in the California Workers' Compensation System. CWCI Research Notes, November 2008.
 2. Jones, S.L. and David, R. Inpatient Utilization in the California Workers' Compensation System. CWCI Research Update, December 2014.
 3. Jones, S. Inpatient Hospital Utilization in California Workers' Compensation: 2008 – 2014. CWCI Spotlight Report, March 2016.
 4. OSHPD Patient Discharge Data File (<http://oshpd.ca.gov>).
 5. Centers for Medicare and Medicaid Services. Design and Development of the Diagnosis Related Group (DRG). [https://www.cms.gov/ICD10Manual/version34-fullcode-cms/fullcode_cms/Design_and_development_of_the_Diagnosis_Related_Group_\(DRGs\)_PBL-038.pdf](https://www.cms.gov/ICD10Manual/version34-fullcode-cms/fullcode_cms/Design_and_development_of_the_Diagnosis_Related_Group_(DRGs)_PBL-038.pdf).
 6. Centers for Medicare and Medicaid Services. Defining the Medicare Severity Diagnosis Related Groups (MS-DRGs), Version 34.0. October 1, 2016. [https://www.cms.gov/ICD10Manual/version34-fullcode-cms/fullcode_cms/Defining_the_Medicare_Severity_Diagnosis_Related_Groups_\(MS-DRGs\)_PBL-038.pdf](https://www.cms.gov/ICD10Manual/version34-fullcode-cms/fullcode_cms/Defining_the_Medicare_Severity_Diagnosis_Related_Groups_(MS-DRGs)_PBL-038.pdf).

Objective

This report builds on the Institute's earlier research on inpatient hospitalizations in California using information from service years 2015 and 2016 to generate updated data identifying:

- The volume and distribution of inpatient hospital discharges across payer groups.
- The top 10 MS-DRG codes used to describe workers' compensation inpatient discharges.
- Carve-out data analyzing the volume of discharges for spinal fusion surgery and lower extremity joint replacement.
- The top 10 hospitals with the highest proportion of workers' compensation patients in their payer mix.

Data and Methods

For this study the author used discharge data obtained from OSHPD for calendar year 2008 through 2016 inpatient discharges. The public-use database compiled by OSHPD includes detailed information submitted under the Health Data and Advisory Council Consolidation Act by health care facilities providing inpatient services in California. The data is grouped by service year and includes patient characteristics (age, gender, type of health plan) and hospitalization information (MS-DRG, major diagnosis and procedure codes, length of stay, and charges), as well as hospital information (name, identification number, and location by county).

The hospital-reported records include the type of payer billed for the inpatient services. This study compares the data associated with four payer types (Medicare, Medi-Cal, Private Coverage, and Workers' Compensation).⁷ The MDC and Surgery/Medical indicator associated with each MS-DRG as defined by CMS⁸ were appended to the OSHPD records, enabling analysis at a less granular level.

The author used Current Procedural Terminology (CPT) codes to extract data from CWCI's Industry Research Information System (IRIS)⁹ billing data to quantify a subset of surgical services approved for Medicare payments based on approved place of service (inpatient hospital, outpatient hospital or ambulatory surgery center).

Results

Trends in Hospitalizations by Payer

As shown in Exhibit 1, workers' compensation has consistently accounted for the smallest share of the inpatient discharges covered by the four payer groups included in this study (ranging from 0.7 percent in 2008 to 0.5 percent in 2016). Over the 9-year span of the study, the number of workers' compensation inpatient hospitalizations declined 31.2 percent from 24,093 in 2008 to 16,576 in 2016, compared to a smaller decrease for private coverage (-19.6 percent) and increases in both Medicare (+2.4 percent) and Medi-Cal (+19.6 percent). At least some of the decline in workers' compensation hospitalizations was due to a decline in statewide injury frequency, as the total number of claims in California fell 3.5 percent between 2008 and 2016,¹⁰ while the increase in Medi-Cal discharges beginning in 2014 was largely a result of significant expansion in Medi-Cal enrollment under the Affordable Care Act (ACA).

7. Excluded payers were County Indigent Programs, Other Government, Other Indigent, Self-Pay, Other Payer, and Unknown representing a combined 5.0% of total discharges in 2016.

8. Center for Medicare and Medicaid Services. List of MS-DRGs Version 34.0. https://www.cms.gov/ICD10Manual/version34-fullcode-cms/fullcode_cms/P0029.html.

9. IRIS is CWCI's proprietary transactional database of California workers' compensation claims comprised of approximately 65 percent of the insurer market as well as self-insured employers.

10. The California Commission on Health and Safety and Workers' Compensation (CHSWC) Annual Reports from 2011 and 2017 (www.dir.ca.gov/chswc/AnnualReportpage1.html) show that according to the state's WCIS database, insured, self-insured, and state employees filed 643,800 claims in 2008 vs. 621,200 claims in 2016.

Between January 2014 and October 2016, 3.7 million Californians between the ages of 19 and 64, or 9.5 percent of the statewide population, were newly enrolled in Medi-Cal pursuant to expanded eligibility under ACA.¹¹ In addition, an estimated 900,000 children were added to the Medi-Cal rolls when the state's Healthy Families program was absorbed into the system in 2014.

Exhibit 1: MS-DRG Count by Discharge Year and Payer Type					
Discharge Year	Medicare	Medi-Cal	Private Coverage	Workers' Comp	Total
2008	1,250,549	1,027,877	1,397,452	24,093 (0.7%)	3,675,878
2009	1,256,097	1,036,376	1,351,040	22,410 (0.6%)	3,643,513
2010	1,286,035	1,035,387	1,288,686	22,416 (0.6%)	3,610,108
2011	1,285,300	1,022,199	1,257,356	22,165 (0.6%)	3,564,855
2012	1,267,634	1,013,248	1,222,199	21,532 (0.6%)	3,503,081
2013	1,257,843	1,000,269	1,163,669	20,336 (0.6%)	3,421,781
2014	1,225,784	1,164,353	1,142,783	18,580 (0.5%)	3,532,920
2015	1,270,642	1,202,280	1,143,359	17,558 (0.5%)	3,616,281
2016	1,281,041	1,229,846	1,123,167	16,576 (0.5%)	3,634,054
2008 - 2016 Change	2.4%	19.6%	-19.6%	-31.2%	-1.1%

The primary difference found between workers' compensation and the other payer groups is the proportion of inpatient stays that were related to surgical procedures. Exhibit 2 shows that 72.5 percent of the workers' compensation inpatient stays were related to surgeries versus 27.4 percent for Medicare; 23.7 percent for Medi-Cal; and 39.3 percent for private coverage. Surgical admissions for all payers have dropped in recent years as many procedures have been moved from the inpatient to the outpatient setting. Advancements in technology and technique have even allowed more complex surgical procedures such as knee replacements and spinal procedures to be performed on an outpatient basis in a hospital or ambulatory surgery center (ASC).^{12,13}

Exhibit 2: 2016 Inpatient Utilization, Medical Issue vs Surgical Procedure by Payer Type*					
	Workers' Comp	Medicare	Medi-Cal	Private Coverage	Total
MEDICAL	27.5%	72.6%	76.3%	60.7%	70.5%
SURGERY	72.5%	27.4%	23.7%	39.3%	29.5%

* Excludes pregnancy, childbirth, and newborns

The California workers' compensation fee schedule used to calculate payments for hospitals (inpatient and outpatient) and ASCs is Medicare-based, so Medicare payment rules also likely influence the decrease in inpatient utilization. Section 1833(t)(1)(B)(i) of the Social Security Act allows CMS to define the services for which payment under the Hospital Outpatient Prospective Payment System (OPPS) is appropriate, and the Secretary of Health and Human Services has determined that services designated as "inpatient only" are not appropriate for a hospital outpatient department. Each year CMS revisits the surgical procedures included in the list and may approve additional services that may be performed in an outpatient hospital setting (see Appendix 2 for a list of services removed from the inpatient only list between 2013 and 2018).

11. Research and Analytic Studies Division. March 2017. *Medi-Cal's Optional Adult ACA Expansion Population – October 2016*. Medi-Cal Statistical Brief. California Department of Health Care Services.

12. Becker, S. and Gamble, M. *11 Trends Facing Surgery Centers*. Becker's Hospital Review. July 23, 2014. <https://www.beckershospitalreview.com/finance/11-trends-facing-surgery-centers.html>.

13. Dyrda, L. *16 Things to Know About Outpatient Total Joint Replacements and ASCs*. Becker's ASC Review. February 10, 2017. <https://www.beckersasc.com/asc-tumaround-ideas-to-improve-performance/16-things-to-know-about-outpatient-total-joint-replacements-and-ascs.html>.

In addition to the inpatient-only list, CMS also identifies surgical procedures that it determines may pose a significant safety risk to patients, or that are expected to require an overnight stay when furnished in an ASC, and excludes them from the approved service list. CMS will not pay ASCs for services excluded from its approved list, which (like the inpatient-only list) is modified on an annual basis (see Appendix 3 for a list of services approved for payment to ASCs between 2013 and 2018).

Using IRIS payment data the author calculated the proportion of services that were removed from either the inpatient only list or approved for ASC payment based on place of service (inpatient, outpatient hospital, or ASC). The results are shown in Appendix 4.

The finding that the vast majority of workers' compensation hospitalizations were for surgical procedures may partially explain the larger drop in inpatient hospital utilization found in workers' compensation compared to Medicare, Medi-Cal, and private coverage, where surgical stays represented a smaller share of the inpatient discharges.^{14,15} Among 2016 workers' compensation inpatient hospitalizations, the number one MS-DRG by volume was MS-DRG 470 - Major Joint Replacement or Reattachment of Lower Extremity w/o Major Complication or Comorbidity (Knee or Hip Replacement). As noted in Exhibit 3, six of the top 10 workers' compensation MS-DRGs were for back and neck issues, with four representing spinal fusions. Of the top 10 workers' compensation MS-DRGs by volume, only one (MS-DRG 552 – Medical Back Problems w/o Major Complication or Comorbidity) was for *medical* hospitalization rather than *surgery*.

Exhibit 3: Top 10 Workers' Compensation MS-DRGs by Volume – Discharge Year 2016								
	MS-DRG Count				MS-DRG Percent Total Count			
	WC	Medicare	Medi-Cal	Private	WC	Medicare	Medi-Cal	Private
470	2,505	59,376	6,863	30,979	15.11%	4.6%	0.6%	2.8%
460	1,395	7,231	1,529	5,235	8.42%	0.6%	0.1%	0.5%
473	766	2,136	907	3,205	4.62%	0.2%	0.1%	0.3%
520	646	1,712	620	2,491	3.90%	0.1%	0.1%	0.2%
494	437	1,792	3,547	3,744	2.64%	0.1%	0.3%	0.3%
483	392	5,160	379	1,505	2.36%	0.4%	0.0%	0.1%
552	362	7,575	3,172	3,042	2.18%	0.6%	0.3%	0.3%
472	343	2,068	630	1,876	2.07%	0.2%	0.1%	0.2%
517	319	2,239	805	1,901	1.92%	0.2%	0.1%	0.2%
455	282	850	194	912	1.70%	0.1%	0.0%	0.1%
Total	7,447	90,139	18,646	54,890	44.93%	7.0%	1.5%	4.9%
470 – Major joint replacement or reattachment of lower extremity w/o MCC 460 – Spinal fusion except cervical w/o MCC 473 – Cervical spinal fusion w/o CC/MCC 520 – Back and neck procedures except spinal fusion without CC/MCC 494 – Lower extremities & humerus procedures except hip, foot, femur w/o CC/MCC 483 – Major joint & limb reattachment procedures of upper extremity w CC/MCC 552 – Medical back problems w/o MCC 472 – Cervical spinal fusion w CC 517 – Other musculoskeletal system & connective tissue operating room procedures w/o CC/MCC 455 – Combined anterior/posterior spinal fusion w/o CC/MCC								

14. Hall, M.J., Schwartzman, A., Zhang, J. and Liu, X. Division of Health Care Statistics. *Ambulatory Surgery Data from Hospitals and Ambulatory Surgery Centers: United States, 2010*. National Health Statistics Reports. February 28, 2017. <https://www.cdc.gov/nchs/data/nhsr/nhsr102.pdf>.

15. Steiner, C.A., Karaca, Z., Moore, B.J., Imshaug, M.C. and Pickens, G. *Surgeries in Hospital-Based Ambulatory Surgery and Hospital Inpatient Settings, 2014*. Agency for Healthcare Research and Quality (AHRQ) Statistical Brief #223. Rev. February 2018.

Exhibit 4 shows the top 10 workers' compensation discharge groups after combining the severity levels associated with MS-DRG service descriptors (*i.e.*, without and with comorbidities or complications) and the comparative proportions that are found in Medicare, Medi-Cal, and private coverage systems. Major Joint Replacement or Reattachment of Lower Extremity remains the top discharge in workers' compensation, MS-DRGs 472 and 473 were combined, and the MS-DRGs representing Aftercare, Musculoskeletal System & Connective Tissue (559, 560, and 561) joined the top 10 list. Compared to the other payment systems, surgical services in workers' compensation were more concentrated among a relatively small number of MS-DRGs, as the top 10 medical conditions and procedures accounted for more than half (53.0 percent) of the workers' compensation discharges, while those same MS-DRGs accounted for less than 10 percent of the discharges for the other payer groups (9.0 percent in Medicare; 2.0 percent in Medi-Cal; and 5.7 percent in private coverage).

Exhibit 4: Top 10 Workers' Compensation Discharges by Volume - Severity Levels Combined (Discharge Year 2016)				
MS-DRGs	Workers' Comp	Medicare	Medi-Cal	Private Coverage
469, 470	15.4%	4.9%	0.6%	2.8%
459, 460	8.7%	0.6%	0.1%	0.5%
471, 472, 473	6.8%	0.4%	0.1%	0.5%
518, 519, 520	5.4%	0.3%	0.1%	0.4%
492, 493, 494	3.8%	0.4%	0.5%	0.5%
453, 454, 455	3.1%	0.2%	0.0%	0.2%
515, 516, 517	2.6%	0.4%	0.1%	0.3%
559, 560, 561	2.6%	0.8%	0.2%	0.2%
483	2.4%	0.4%	0.0%	0.1%
551, 552	2.3%	0.7%	0.3%	0.3%
Total	53.0%	9.0%	2.0%	5.7%
469, 470 – Major hip and knee joint replacement or reattachment of lower extremity (or ankle replacement) 459, 460 – Spinal fusion except cervical 471, 472, 473 – Cervical spinal fusion 518, 519, 520 – Back & neck procedures except spinal fusion or disc device/neurostimulator 492, 493, 494 – Lower extremity & humerus procedures except hip, foot, femur 453, 454, 455 – Combined anterior/posterior spinal fusion 515, 516, 517 – Other musculoskeletal system & connective tissue operating room procedures 559, 560, 561 – Aftercare, musculoskeletal system & connective tissue 483 – Major joint/limb reattachment procedure of upper extremities 551, 552 – Medical back problems				

Exhibit 5 gives the breakdown of the inpatient hospitalizations among the top five major diagnostic categories in workers' compensation for 2008 through 2016. As was the case with the MS-DRG service descriptors, the workers' compensation inpatient hospitalizations were heavily concentrated among a relatively small number of Major Diagnostic Categories (MDCs). The majority of workers' compensation claims are for musculoskeletal injuries,¹⁶⁻¹⁷ so it is not surprising that diseases and disorders of the musculoskeletal system and connective tissue accounted for about two-thirds of the inpatient hospitalizations in the system (ranging between 64.0 percent and 67.8 percent during the 9-year study period), while the top five MDCs represented between 80.1 percent and 82.8 percent of all injured worker inpatient hospitalizations.

Exhibit 5: Top Five Major Diagnostic Categories for 2016 Workers' Compensation Discharges (As a Percentage of Inpatient Hospitalizations, 2008 – 2016)									
MDC	2008	2009	2010	2011	2012	2013	2014	2015	2016
08	65.2%	66.1%	67.1%	66.4%	67.8%	64.1%	64.0%	64.8%	66.0%
01	5.0%	4.7%	4.9%	4.7%	4.8%	4.7%	4.7%	4.9%	5.3%
05	5.2%	5.3%	5.0%	5.0%	4.3%	4.6%	4.6%	4.7%	4.6%
21	3.7%	3.2%	3.1%	3.2%	3.2%	3.8%	3.9%	3.8%	3.7%
09	3.0%	2.7%	2.6%	2.4%	2.8%	3.0%	3.0%	3.1%	3.2%
Total	82.0%	82.1%	82.7%	81.6%	82.9%	80.1%	80.2%	81.2%	82.8%
08 – Diseases & disorders of the musculoskeletal system & connective tissue 01 – Diseases & disorders of the nervous system 05 – Diseases & disorders of the circulatory system 21 – Injuries, poisonings & toxic effects of drugs 09 – Diseases & disorders of the skin, subcutaneous tissue & breast									

16. California Commission on Health and Safety and Workers' Compensation. *CHSWC 2016 Annual Report*.
https://www.dir.ca.gov/chswc/Reports/2016/CHSWC_AnnualReport2017.pdf.

17. CWCI's IRIS Regional Score Cards. August 2016 – April 2017.

Exhibit 6 provides a different perspective on the top 10 workers' compensation MS-DRGs by limiting the discharges to those within the musculoskeletal Major Diagnostic Category (MDC 08). Greater variation in service mix is found among the different payer groups when the discharges are limited to those in MDC 08, with spinal fusion procedures accounting for a higher percentage of the workers' compensation musculoskeletal MDCs, and lower extremity joint replacement procedures representing a higher share of the Medicare and private coverage musculoskeletal MDCs.¹⁸

Exhibit 6: Top 10 Workers' Compensation Musculoskeletal (MDC 08) MS-DRGs as Percent Total Musculoskeletal by Payer Type					
MS-DRG	Workers' Comp	Medicare	Medi-Cal	Private	Total
470	22.9%	34.2%	13.8%	35.0%	30.9%
460	12.8%	4.2%	3.1%	5.9%	4.8%
473	7.0%	1.2%	1.8%	3.6%	2.2%
520	5.9%	1.0%	1.2%	2.8%	1.7%
494	4.0%	1.0%	7.1%	4.2%	2.9%
483	3.6%	3.0%	0.8%	1.7%	2.3%
552	3.3%	4.4%	6.4%	3.4%	4.4%
472	3.1%	1.2%	1.3%	2.1%	1.5%
517	2.9%	1.3%	1.6%	2.1%	1.6%
455	2.6%	0.5%	0.4%	1.0%	0.7%
Total	68.1%	51.9%	37.5%	61.9%	53.0%
470 – Major joint replacement or reattachment of lower extremity w/o MCC 460 – Spinal fusion except cervical w/o MCC 473 – Cervical spinal fusion w/o CC/MCC 520 – Back and neck procedures except spinal fusion without CC/MCC 494 – Lower extremity & humerus procedures except hip, foot, femur w/o CC/MCC 483 – Major joint & limb reattachment procedures of upper extremity w CC/MCC 552 – Medical back problems w/o MCC 472 – Cervical spinal fusion w CC 517 – Other musculoskeletal system & connective tissue operating room procedures w/o CC/MCC 455 – Combined anterior/posterior spinal fusion w/o CC/MCC					

18. Appendix 1 contains tables listing the top 10 discharges for each of the other payer groups showing that the majority of discharges for Medi-Cal and Private Coverage are related to delivery and newborns, while Medicare discharges are spread across a wider variety of medical conditions.

Implant-Eligible Spine Surgeries

There were 782 MS-DRG codes used to describe inpatient hospitalizations during the nine-year study period,¹⁹ including the following 14 codes for implant-eligible spinal surgeries:

- surgeries related to the nervous system which do not always involve vertebral fusion (MS-DRGs 028, 029, and 030); and
- musculoskeletal spinal disorders which do involve vertebral fusion (MS-DRGs 453, 454, 455, 456, 457, 458, 459, 460, 471, 472, and 473).

Exhibit 7 compares the yearly volume and proportional share of implant-eligible spinal surgeries for each payer group. The total number of workers' compensation spinal fusion surgeries per year declined nearly 36 percent over the study period, with a 9.4 percent decline from 2015 to 2016. This decline began with the 2012 legislative (SB 863) and regulatory activity to eliminate duplicative payments for implant hardware, as well as the implementation of Independent Medical Review as a means of enforcing medical necessity determinations based on evidence-based medicine standards,²⁰ and continued with the exit of Pacific Hospital of Long Beach from the marketplace.²¹

Unlike workers' compensation and private coverage, which incorporate utilization review in the medical procedure approval process, Medicare does not require preapproval to ensure payment of medical services. This has contributed to the continued growth of spinal fusions in the Medicare population.²² In addition, as noted earlier, there was a significant increase in the adult population of Medi-Cal enrollees after implementation of the ACA in 2014,²³ and a corresponding increase in Medi-Cal spinal fusion discharges, in 2014, 2015, and 2016.

Exhibit 7: Volume of Discharges for Implant-Eligible Spinal Surgeries and Percent of Implant-Eligible Spinal Surgeries to All Discharges by Payer Group				
Discharge Year	Medicare	Medi-Cal	Private Coverage	Workers' Comp
2008	10,749 (0.9%)	2,108 (0.2%)	16,106 (1.2%)	5,070 (21.0%)
2009	12,093 (1.0%)	2,227 (0.2%)	16,784 (1.2%)	4,866 (21.7%)
2010	12,670 (1.0%)	2,417 (0.2%)	16,787 (1.3%)	5,193 (23.2%)
2011	13,402 (1.0%)	2,479 (0.2%)	16,240 (1.3%)	4,999 (22.6%)
2012	14,246 (1.1%)	2,593 (0.3%)	16,412 (1.3%)	4,978 (23.1%)
2013	14,903 (1.2%)	2,730 (0.3%)	16,175 (1.4%)	4,559 (22.4%)
2014	15,714 (1.3%)	3,956 (0.3%)	15,844 (1.4%)	3,938 (21.2%)
2015	16,104 (1.3%)	4,484 (0.4%)	15,590 (1.4%)	3,598 (20.5%)
2016	17,051 (1.3%)	5,098 (0.4%)	15,081 (1.3%)	3,258 (19.7%)
'08-'16 Net Change	58.6%	141.8%	- 6.4%	- 35.7%

19. The Centers for Medicare and Medicaid Services (CMS) may revise, delete, and/or add MS-DRGs each year.

20. SB 863 added Labor Code §4610.5, establishing Independent Medical Review to resolve medical necessity disputes.

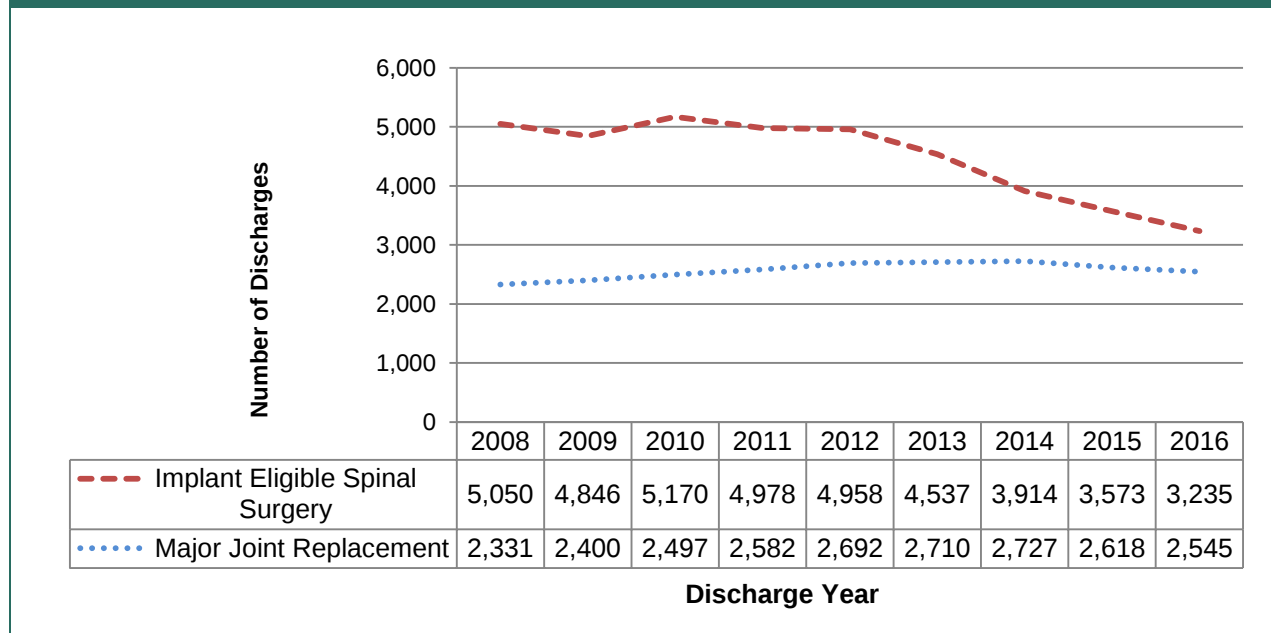
21. Jones, S. *Inpatient Hospital Utilization in California Workers' Comp: 2008–2014*. CWCI Spotlight Report, March 2016.

22. Tillman, J. *Spinal fusion costs spur insurance changes, but can Medicare follow?* Tampa Bay Times. June 20, 2014. <http://www.tampabay.com/news/health/spinal-fusion-costs-spur-insurance-changes-but-can-medicare-follow/2185334>.

23. Research and Analytic Studies Division. March 2017. *Medi-Cal's Optional Adult ACA Expansion Population – October 2016*. Medi-Cal Statistical Brief. California Department of Health Care Services.

Exhibit 8 tracks the trends in the volume of spinal fusion surgeries and lower extremity major joint replacements²⁴ in workers' compensation over the 9-year span of the study. The growing number of major lower extremity joint replacements (total knee or hip replacements, identified by MS-DRG 470) in workers' compensation corresponds to the increased prevalence of these procedures found in the U.S. adult population.²⁵ However, after increasing steadily from 2008 through 2014, the volume of major lower extremity joint replacements among California injured workers has declined recently, decreasing in both 2015 and 2016.

Exhibit 8: Number of Lower Extremity Major Joint Replacement and Spinal Fusion Discharges for Workers' Compensation



24. Lower Extremity Major Joint Replacement includes MS-DRG 469 – Major joint replacement or reattachment of lower extremity w/ MCC and MS-DRG 470 – Major joint replacement or reattachment of lower extremity w/o MCC.

25. Rath, L. Knee Replacement and Revision Surgeries on the Rise. Arthritis Foundation. Retrieved February 22, 2018. <https://www.arthritis.org/living-with-arthritis/treatments/joint-surgery/types/knee/knee-replacement-younger-patients.php>.

Top 10 Hospitals Based on Injured Workers as a Percentage of Inpatient Discharges

There is wide variance among hospitals in regard to the proportion of their inpatient care that involves workers' compensation patients versus other payer categories. Exhibit 9 lists the 10 hospitals in California that had the highest proportion of their inpatient discharges covered by workers' compensation in 2016, noting the percentage of all the hospital's inpatient discharges and the percentage of their MDC 08 discharges (for musculoskeletal issues) that involved injured workers in each of the four most recent years (2013 through 2016). During the study period these ten hospitals combined accounted for less than one percent of the total statewide inpatient hospitalizations.

Three of the top 10 hospitals (Monrovia Memorial Hospital, Kindred Hospital Rancho, and Promise Hospital of East Los Angeles) are registered with Medicare as Long-Term Care Hospitals (LTCH),²⁶ and as such are excluded from the California Workers' Compensation Inpatient Facility Fee Schedule payment formula. The 2013-2016 results for Monrovia Memorial Hospital show that workers' compensation patients accounted for between 23.5 percent and 29.3 percent of their overall inpatient population, but between 73.4 percent and 78.7 of their MDC 08 discharges for musculoskeletal diagnoses. Kindred Hospital Rancho shows an even greater disparity, with workers' compensation representing 17.7 percent of their inpatient population in 2013, declining to 9.3 percent in 2016, while over the same 4-year span, workers' compensation patients accounted for between 68.4 percent to 87 percent of Kindred's musculoskeletal discharges. Exhibit 9 also shows that Promise Hospital of East Los Angeles – East L.A. Campus had a growing workers' compensation inpatient population as it had no workers' compensation inpatient discharges in 2013, but in 2016 5.4 percent of its inpatient stays were covered by workers' compensation. That increase was largely due to the musculoskeletal group, as workers' compensation payers' share of Promise Hospital's MDC 08 discharges increased from 0.0 percent in 2013 to 58.4 percent in 2016.

Exhibit 9: Proportion of Discharges Represented by Workers' Compensation - All DRGs versus MDC 08 Only

Hospital	WC as % of Hospital's Discharges				Musculoskeletal (MDC 08) Only			
	2013	2014	2015	2016	2013	2014	2015	2016
Miracle Mile Medical Center	55.6%	62.0%	68.8%	52.7%	58.0%	63.0%	68.7%	53.2%
Monrovia Memorial Hospital	23.5%	29.3%	27.8%	24.4%	74.5%	76.7%	78.7%	73.4%
Patients' Hospital of Redding	8.0%	10.0%	11.2%	14.3%	11.0%	13.2%	17.0%	23.9%
Fresno Surgical Hospital	8.4%	7.4%	9.4%	10.4%	9.0%	7.9%	9.8%	11.1%
Kindred Hospital - Rancho	17.7%	13.0%	12.6%	9.3%	87.0%	78.1%	74.5%	68.4%
Chapman Global Medical Center	3.5%	3.8%	7.0%	7.2%	15.9%	21.7%	38.4%	38.9%
Marina Del Rey Hospital	6.4%	5.5%	5.3%	5.9%	21.7%	18.5%	18.5%	20.0%
Promise Hospital of East Los Angeles-East L.A. Campus	0.0%	0.1%	4.2%	5.4%	0.0%	1.8%	47.8%	58.4%
Stanislaus Surgical Hospital	8.0%	5.0%	5.9%	4.4%	8.8%	5.4%	6.3%	5.0%
West Covina Medical Center	11.8%	12.6%	3.0%	4.0%	37.9%	28.9%	21.4%	26.4%

26. Section 1886(d)(1)(B)(iv)(I) of the Social Security Act defines a Long-Term Care Hospital as "a hospital which has an average inpatient length of stay (as determined by the Secretary of Health and Human Services) of greater than 25 days."
<https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/LongTermCareHospitalPPS/index.html>.

Long-Term Care Hospitals

Exhibit 10 shows the distribution of inpatient discharges for the three long-term care hospitals based on surgery MS-DRGs. For all three of these long-term hospitals, the majority of the workers' compensation inpatient discharges involved surgeries (ranging between 86.2 percent for Kindred Hospital Rancho to 100 percent for Monrovia Memorial Hospital). Surgery was also the primary (97 percent) reason for inpatient admission of private coverage patients for Monrovia Memorial Hospital. Thus, for all three of the long-term care hospitals, the proportion of workers' compensation inpatient stays involving surgeries was well above the statewide rate of 72.5 percent that was shown in Exhibit 2. Removing these three long-term care hospitals from the statewide calculation drops the proportion slightly to 72.1 percent.

Conversely, most of the inpatient stays by Medicare patients at these three long-term care hospitals were for *medical* MS-DRGs (ranging from 83 percent for Promise Hospital of East Los Angeles to 87.2 percent for Kindred Hospital Rancho). Monrovia Memorial Hospital did not have any medical discharges for workers' compensation patients, Promise Hospital of East Los Angeles – East L.A. Campus had just 1.4 percent, and Kindred Hospital Rancho had 13.8 percent.

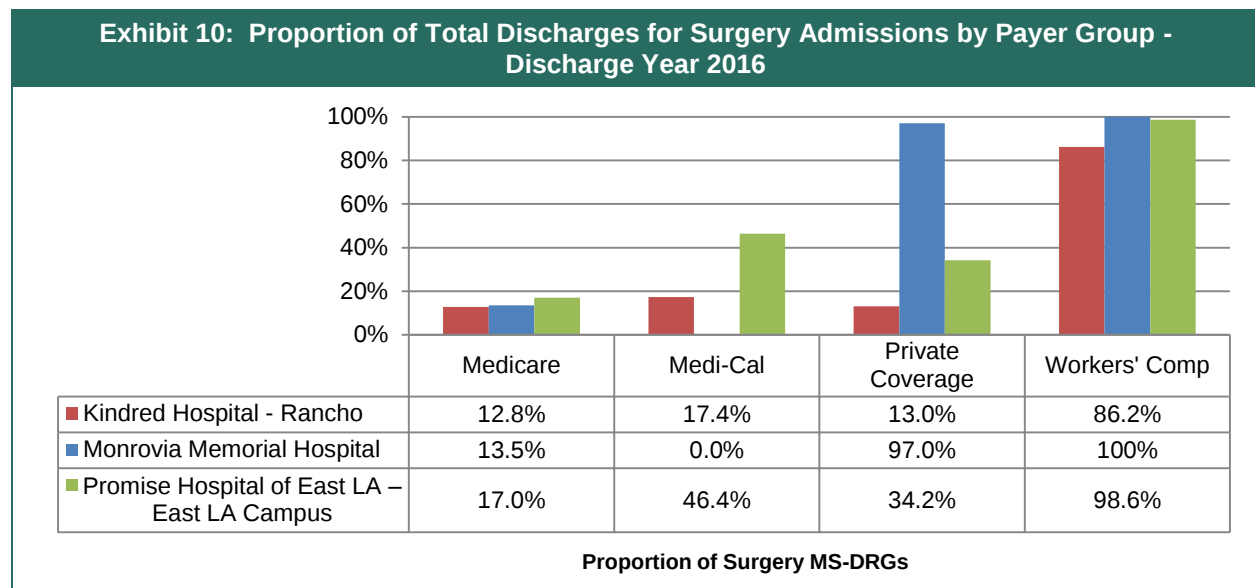


Exhibit 11 compares the average length of stay (LOS) for each of the long-term facilities. The average LOS for workers' compensation patients tended to be significantly less than for the other payer groups, with the exceptions of private coverage patients treated at Monrovia Memorial Hospital. Although LTCHs are licensed as "acute-care" hospitals, they focus on patients who, on average, stay more than 25 days, so the lengthier average stays shown in Exhibit 11 are not surprising. The shorter stays experienced by workers' compensation patients are evidence of healthier patients admitted for surgical procedures.

Exhibit 11: Average Length of Stay by Admission Category and Payer Group Discharge Year 2016								
	Medicare		Medi-Cal		Private Coverage		Workers' Comp	
	MED	SURG	MED	SURG	MED	SURG	MED	SURG
Kindred Hospital - Rancho	21.9	26.2	29.4	54.8	30.5	59.7	27.6	4.1
Monrovia Memorial Hospital	22.5	37.6	N/A	N/A	4.0	2.9	N/A	3.1
Promise Hospital of East LA – East LA Campus	19.3	33.7	132.9	272.9	34.6	91.9	6.0	5.3

Discussion

The recent statewide inpatient hospital data from OHSPD show that the number of hospitalizations in California workers' compensation continues to decline, falling 31.2 percent between 2008 and 2016, while the number of inpatient stays paid under private healthcare insurance has also declined, although to a lesser degree (-19.6 percent). These results stand in stark contrast to those for government-funded programs (Medicare and Medi-Cal), where the number of inpatient stays increased during the same time 9-year period (+2.4 percent and +19.6 percent, respectively). While the increase in inpatient stays paid by Medi-Cal corresponds to the influx of new adult enrollees beginning in 2014 pursuant to changes in eligibility under the ACA, the decreases found in workers' compensation and private coverage do not necessarily correspond to changes in the population of patients covered under those payment systems. For example, the decline in the number of California workers' compensation inpatient stays between 2008 and 2016 was nearly nine times the 3.5 percent decline in total claim volume over that same time frame.

The primary difference characterizing workers' compensation hospital admissions is that the majority (72.5 percent) are related to a scheduled surgical procedure, while surgery admissions account for only 27.4 percent of Medicare inpatient stays, 23.7 percent of Medi-Cal inpatient stays, and 39.3 percent of the inpatient stays covered under private health insurance. Since a greater proportion of the workers' compensation hospitalizations are for surgery, the workers' compensation community may be more greatly impacted by the trend of surgical procedures moving from inpatient to outpatient settings (*i.e.*, either outpatient hospitals or freestanding ambulatory surgery centers).

The impact of technological and medical advancements is most recently evidenced in the decision by CMS to allow payment for total knee replacement surgery in an outpatient hospital setting beginning January 1, 2018.^{27,28} Prior to January 1, 2018 Medicare rules required that this service be provided on an inpatient basis only. Since California workers' compensation medical fee schedules are based on Medicare, this change in Medicare's policy will likely result in more total knee replacements being performed in ambulatory outpatient hospital settings.²⁹ In addition to tracking this change and its potential impact on inpatient hospital utilization, future CWCI research will monitor changes in the volume and types of other major joint replacement surgeries in the California workers' compensation system, as well as changes in the surgical settings for those services.

While shifting surgical settings from an inpatient to an outpatient facility is often done in anticipation of reducing costs, the data also point to factors that can impact the potential savings. An analysis of place of service changes for the surgical procedures removed from the Medicare Inpatient Only list between 2013 and 2016 shows that in some cases, these surgeries were performed in outpatient settings prior to Medicare's approval, which dampened the impact of their removal from the Inpatient Only list on workers' compensation payments (see Appendix 4 for details). In addition, the data show that three hospitals designated as Long-Term Care Hospitals by Medicare also provide inpatient surgical services on an acute care basis, with a majority of these services provided to workers' compensation patients, and in the case of one hospital, private coverage patients. One of these hospitals, Kindred Hospital Rancho, offers a special Workers' Compensation Orthopedic Program³⁰ for injured workers, which may account for the prominence of workers' compensation patients in their surgery admissions (Exhibit 11), while another hospital, Monrovia Memorial, offers a Spinal and Orthopedic Surgery Program which also serves the workers' compensation community. However, hospitals designated by Medicare as Long-Term Care Hospitals do not fall under Medicare's

27. The Centers for Medicare and Medicaid Services (CMS). *January 2018 Update of the Hospital Outpatient Prospective Payment System (OPPS)*. MLN Matters Number: MM10417. <https://www.cms.gov/Outreach-and-Education/Medicare-Learning-Network-MLN/MLNMattersArticles/Downloads/MM10417.pdf>.

28. The new Medicare ruling does not apply to Ambulatory Surgery Centers (ASCs). Total knee replacements are still not payable to ASCs under Medicare.

29. Meyer, H. *Replacing Joints Faster, Cheaper and Better?*. Modern Healthcare. <http://www.modernhealthcare.com/article/20160604/MAGAZINE/306049986>

30. <https://www.kindredhealthcare.com/locations/transitional-care-hospitals/kindred-hospital-rancho/types-of-care/additional-types-of-care>.

Acute Inpatient Prospective Payment System, and thus are not subject to the cost controls afforded by the California Workers' Compensation Official Medical Fee Schedule.

In addition, two of the top 10 hospitals that had the highest proportion of their inpatient discharges covered by workers' compensation in 2016 (Exhibit 9) were physician-owned hospitals specializing in orthopedic surgery. Physician ownership of hospitals has been the subject of debate at the national level for some time, and a provision in the ACA placed restrictions on physician-owned hospitals that wanted to take part in the Medicare and Medicaid systems. The Trump Administration has asked for comments on the ACA restrictions,³¹ and a bill introduced in the House of Representatives would repeal the ACA restrictions,³² freeing the expansion of physician-owned hospitals. Physician-ownership of hospitals may be the subject of lien disputes in California workers' compensation, as evidenced by a Workers' Compensation Appeals Board (WCAB) panel decision regarding a physician's self-referral for inpatient surgery to a hospital that he owns.³³ In that case, Labor Code §139.3 was narrowly interpreted to exclude self-referral for inpatient services since only outpatient surgeries were specifically included in the list of prohibited self-referrals, creating a loophole in the self-referral restrictions.

Although the results of this study confirm that the number of inpatient hospitalizations in the California workers' compensation system are continuing to decline, the data also show that the types of services provided are more heavily concentrated among more complex surgeries such as combined anterior/posterior spinal surgery, and medical issues such as cellulitis, which was the 11th ranked MS-DRG for workers' compensation patients in terms of overall volume in 2016. The Institute will continue to monitor both the types and the volume of inpatient services rendered in the California workers' compensation system, including a more in-depth analysis of non-surgical hospitalizations of injured workers, which will be the subject of future research.

31. Dickson, V. *CMS asks for comments on physician-owned hospital regulation*. Modern Healthcare. April 17, 2017. <http://www.modernhealthcare.com/article/20170417/NEWS/170419883>.

32. Lagasse, J. *Physician-owned hospitals debate revived by House bill*. Healthcare Finance News. March 2, 2017. <http://www.healthcarefinancenews.com/news/physician-owned-hospitals-debate-revived-house-bill-some-say-they-offer-higher-quality-care>.

33. *Warner Bros. Studio Facilities v. Workers' Comp. Appeals Bd. (White)* (2014) 79 Cal. Comp. Cases 1587, 2014 Cal. Wrk. Comp. LEXIS 159 (writ denied).

Appendix 1: Discharges by Volume for Payer Groups

Top 10 Medicare Discharges by Volume			
MS-DRG	Count	Percent of Medicare Total	Description
871	93,231	7.3%	Septicemia or severe sepsis without mv >96 hours with MCC
470	59,376	4.6%	Major joint replacement or reattachment of lower extremity without MCC
885	42,398	3.3%	Psychoses
291	33,159	2.6%	Heart failure and shock with MCC
872	28,519	2.2%	Septicemia or severe sepsis without mv >96 hours without MCC
292	19,611	1.5%	Heart failure and shock with CC
392	18,661	1.5%	Esophagitis, gastroenteritis and miscellaneous digestive disorders without MCC
189	17,927	1.4%	Pulmonary edema and respiratory failure
690	16,994	1.3%	Kidney and urinary tract infections without MCC
193	15,872	1.2%	Simple pneumonia and pleurisy with MCC
Total		27.0%	

Top 10 Private Coverage Discharges by Volume			
MS-DRG	Count	Percent of Private Total	Description
795	141,132	12.6%	Normal newborn
775	127,039	11.3%	Vaginal delivery without complicating diagnoses
794	56,232	5.0%	Neonate with other significant problems
885	46,663	4.2%	Psychoses
766	42,646	3.8%	Cesarean section without CC/MCC
470	30,979	2.8%	Major joint replacement or reattachment of lower extremity without MCC
765	29,842	2.7%	Cesarean section with CC/MCC
774	21,243	1.9%	Vaginal delivery with complicating diagnoses
871	17,110	1.5%	Septicemia or severe sepsis without mv >96 hours with MCC
392	15,161	1.3%	Esophagitis, gastroenteritis and miscellaneous digestive disorders without MCC
Total		47.0%	

Top 10 Medi-Cal Discharges by Volume			
MS-DRG	Count	Percent of Medi-Cal Total	Description
795	148,880	12.1%	Normal newborn
775	123,219	10.0%	Vaginal delivery without complicating diagnoses
885	80,296	6.5%	Psychoses
794	48,822	4.0%	Neonate with other significant problems
766	41,804	3.4%	Cesarean section without CC/MCC
765	26,215	2.1%	Cesarean section with CC/MCC
871	24,587	2.0%	Septicemia or severe sepsis without mv >96 hours with MCC
392	19,668	1.6%	Esophagitis, gastroenteritis and miscellaneous digestive disorders without MCC
774	18,839	1.5%	Vaginal delivery with complicating diagnoses
603	16,391	1.3%	Cellulitis without MCC
Total		44.6%	

Appendix 2: Services Removed by Medicare from the Inpatient Only List by Calendar Year Approval

Removed from Inpatient Only List		
CY	CPT Code	CPT Description
2014	none	
2015	63043	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, re-exploration, single interspace; each additional cervical interspace (List separately in addition to code for primary procedure)
	63044	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, re-exploration, single interspace; each additional lumbar interspace (List separately in addition to code for primary procedure)
2016	20936	Autograft for spine surgery only (includes harvesting the graft); local (eg, ribs, spinous process, or laminar fragments) obtained from same incision (List separately in addition to code for primary procedure)
	20937	Autograft for spine surgery only (includes harvesting the graft); morselized (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
	20938	Autograft for spine surgery only (includes harvesting the graft); structural, bicortical or tricortical (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
	22552	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophylectomy and decompression of spinal cord and/or nerve roots; cervical below C2, each additional interspace (List separately in addition to code for separate procedure)
2017	22585	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); each additional interspace (List separately in addition to code for primary procedure)
	22840	Posterior non-segmental instrumentation (eg, Harrington rod technique, pedicle fixation across 1 interspace, atlantoaxial transarticular screw fixation, sublaminar wiring at C1, facet screw fixation) (List separately in addition to code for primary procedure)
	22842	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 3 to 6 vertebral segments (List separately in addition to code for primary procedure)
	22845	Anterior instrumentation; 2 to 3 vertebral segments (List separately in addition to code for primary procedure)
	22858	Total disc arthroplasty (artificial disc), anterior approach, including discectomy with end plate preparation (includes osteophylectomy for nerve root or spinal cord decompression and microdissection); second level, cervical (List separately in addition to code for primary procedure)
	31584	Laryngoplasty; with open reduction and fixation of (eg, plating) fracture, includes tracheostomy, if performed
	31587	Laryngoplasty, cricoid split, without graft placement
2018	27447	Arthroplasty, knee, condyle and plateau; medial AND lateral compartments with or without patella resurfacing (total knee arthroplasty)

Appendix 3: Services Approved by Medicare for Performance in Ambulatory Surgery Centers by Calendar Year Approval

Approved for Ambulatory Surgery Centers		
CY	CPT Code	CPT Description
2014	27415	Osteochondral allograft, knee, open
	27524	Open treatment of patellar fracture, with internal fixation and/or partial or complete patellectomy and soft tissue repair
2015	22551	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophyctomy and decompression of spinal cord and/or nerve roots; cervical below C2
	22554	Arthrodesis, anterior interbody technique, including minimal discectomy to prepare interspace (other than for decompression); cervical below C2
	22612	Arthrodesis, posterior or posterolateral technique, single level; lumbar (with lateral transverse technique, when performed)
	22614	Arthrodesis, posterior or posterolateral technique, single level; each additional vertebral segment (List separately in addition to code for primary procedure)
	63020	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, cervical
	63030	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc; 1 interspace, lumbar
	63042	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, re-exploration, single interspace; lumbar
	63044	Laminotomy (hemilaminectomy), with decompression of nerve root(s), including partial facetectomy, foraminotomy and/or excision of herniated intervertebral disc, re-exploration, single interspace; each additional lumbar interspace (List separately in addition to code for primary procedure)
	63045	Laminectomy, facetectomy and foraminotomy (unilateral or bilateral with decompression of spinal cord, cauda equina and/or nerve root[s], [eg, spinal or lateral recess stenosis]), single vertebral segment; cervical
	63047	Laminectomy, facetectomy and foraminotomy (unilateral or bilateral with decompression of spinal cord, cauda equina and/or nerve root[s], [eg, spinal or lateral recess stenosis]), single vertebral segment; lumbar
	63056	Transpedicular approach with decompression of spinal cord, equina and/or nerve root(s) (eg, herniated intervertebral disc), single segment; lumbar (including transfacet, or lateral extraforaminal approach) (eg, far lateral herniated intervertebral disc)
2016	0171T	Insertion of posterior spinous process distraction device (including necessary removal of bone or ligament for insertion and imaging guidance), lumbar; single level
	0172T	Insertion of posterior spinous process distraction device (including necessary removal of bone or ligament for insertion and imaging guidance), lumbar; each additional level (List separately in addition to code for primary procedure)

Approved for Ambulatory Surgery Centers (continued)		
CY	CPT Code	CPT Description
2017	20936	Autograft for spine surgery only (includes harvesting the graft); local (eg, ribs, spinous process, or laminar fragments) obtained from same incision (List separately in addition to code for primary procedure)
	20937	Autograft for spine surgery only (includes harvesting the graft); morselized (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
	20938	Autograft for spine surgery only (includes harvesting the graft); structural, bicortical or tricortical (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
	22552	Arthrodesis, anterior interbody, including disc space preparation, discectomy, osteophytectomy and decompression of spinal cord and/or nerve roots; cervical below C2, each additional interspace (List separately in addition to code for separate procedure)
	22840	Posterior non-segmental instrumentation (eg, Harrington rod technique, pedicle fixation across 1 interspace, atlantoaxial transarticular screw fixation, sublaminar wiring at C1, facet screw fixation) (List separately in addition to code for primary procedure)
	22842	Posterior segmental instrumentation (eg, pedicle fixation, dual rods with multiple hooks and sublaminar wires); 3 to 6 vertebral segments (List separately in addition to code for primary procedure)
	22845	Anterior instrumentation; 2 to 3 vertebral segments (List separately in addition to code for primary procedure)
	22853	Insertion of interbody biomechanical device(s) (eg, synthetic cage, mesh) with integral anterior instrumentation for device anchoring (eg, screws, flanges), when performed, to intervertebral disc space in conjunction with interbody arthrodesis, each interspace (List separately in addition to code for primary procedure)
	22854	Insertion of intervertebral biomechanical device(s) (eg, synthetic cage, mesh) with integral anterior instrumentation for device anchoring (eg, screws, flanges), when performed, to vertebral corpectomy(ies) (vertebral body resection, partial or complete) defect, in conjunction with interbody arthrodesis, each contiguous defect (List separately in addition to code for primary procedure)
2018	22856	Total disc arthroplasty (artificial disc), anterior approach, including discectomy with end plate preparation (includes osteophytectomy for nerve root or spinal cord decompression and microdissection); single interspace, cervical
	22858	Total disc arthroplasty (artificial disc), anterior approach, including discectomy with end plate preparation (includes osteophytectomy for nerve root or spinal cord decompression and microdissection); second level, cervical (List separately in addition to code for primary procedure)

Appendix 4: 2013 – 2016 Change in the Proportion of Services Provided in Inpatient, Outpatient Hospital, and ASC Settings (Medicare, Medi-Cal, and Workers' Compensation Patients)

% Change in Place of Service between 2013 and 2016			
CPT Code	Inpatient	Outpatient	ASC
20936	-12.3%	-0.7%	13.1%
20937	-1.9%	-0.9%	2.8%
20938	1.8%	0.0%	-1.8%
22551	22.2%	-13.8%	-8.4%
22552	-8.0%	3.6%	4.4%
22554	-16.2%	-2.5%	18.7%
22585	-3.0%	-1.1%	4.1%
22612	-1.6%	0.1%	1.6%
22614	-1.8%	-0.2%	2.0%
22840	0.4%	-0.4%	0.1%
22842	-1.0%	0.2%	0.8%
22845	-4.2%	0.1%	4.1%
22851	-1.9%	-0.2%	2.1%
22856	28.6%	21.4%	-50.0%
27415	-34.3%	66.7%	-32.3%
27447	-1.3%	0.4%	0.8%
27524	-9.6%	-3.3%	12.9%
63020	-28.8%	12.0%	16.8%
63030	-10.3%	1.6%	8.7%
63042	-6.1%	0.5%	5.6%
63044	-27.3%	9.1%	18.2%
63045	6.1%	-5.8%	-0.3%
63047	-10.2%	3.9%	6.2%
63056	9.9%	-5.7%	-4.2%

About the Author

Stacy Jones is a Senior Research Associate at the California Workers' Compensation Institute.

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